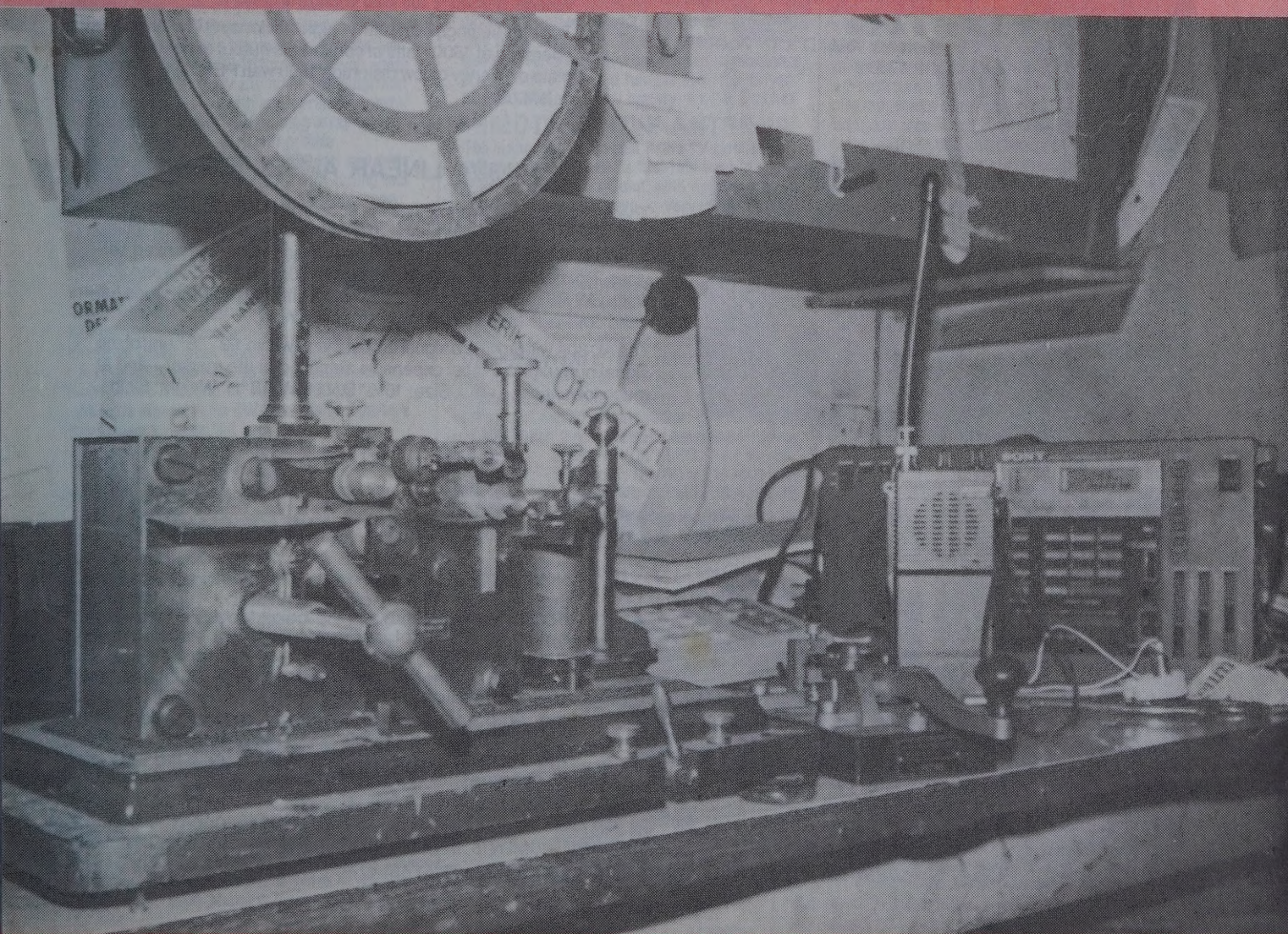
INTN'L MONTHLY MAGAZINE - BY AND FOR ACTIVE RADIOAMATEURS

RADIOSPORTING

JUNE 1986 No. 19 8606 $2.00

DX NEWS 160 CLUB LIFE VHF CONTESTING
1986 DAYTON HAMVENTION SUNSPOT PREDICTION
LOW BAND OPERATION SECRETS RADIO FUNNIES
CONTEST RULES RESULTS 1985 SAC and CQ AA CW
TRAFFIC, EMERGENCY FCC NEWS MAIL ROOM



A GENERATION GAP AT SYZYGY

AMERITRON

AL-1200

LINEAR AMPLIFIER

1500 Watts Output—All Modes
160 Through 15 Meters

The **Ameritron AL-1200** Linear Amplifier is designed for 1500 watts output (over 2500 watts input) on all modes with high efficiency and total reliability. The **AL-1200** covers the amateur radio bands 160 through 15 meters. It also features wide frequency coverage for MARS and other services authorized to operate at high power.

The **AL-1200** uses the rugged, inexpensive Eimac 3CX1200A7 high-mu ceramic/metal triode in a Class AB_2 grounded grid circuit.

The built-in ALC circuit prevents the amplifier output from exceeding 1500 watts if the exciter gain is inadvertantly set too high.

The power supply has a commercial service rated 32 lb. hypersil transformer and heavy duty rectifiers in a full wave bridge circuit with computer grade capacitors. No load voltage is 3600 V. full load voltage is 3300 V.

Two bias settings allow either high efficiency RTTY and CW operation at 1500 watts of continuous output at nearly 70% plate efficiency or low distortion 1500 watt PEP, SSB, SSTV, or AM output.

AL-1200 SPECIFICATIONS:

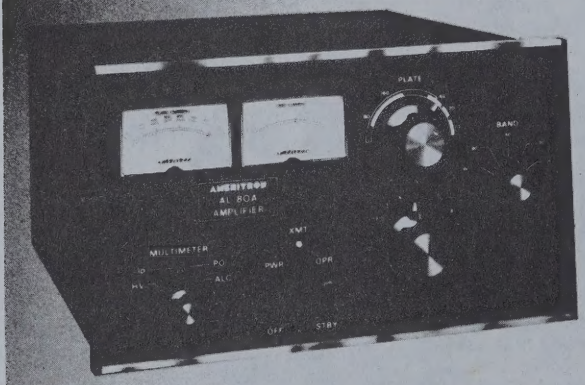
Frequency Coverage: 1.8, 3.5, 7, 14, 21 MHz and WARC bands. Export model also includes 28 MHz.

Input Circuit: adjustable pi-network, VSWR 1.2:1 or less at resonance.

Input Bandwidth: 20% for 2:1 VSWR or better.

Drive Requirements: 90 watts typical for 1500 watts output.

Dimensions: 18½"D. x 17"W.x10"H.
Weight: 77 lbs.



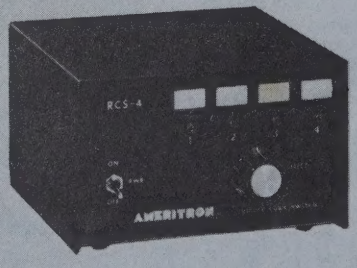
AL-80A LINEAR AMPLIFIER

The Ameritron AL-80A combines the economical 3-500Z with a heavy duty tank circuit to achieve nearly 70% efficiency from 160 to 15 meters. It has wide frequency coverage for MARS and other authorized services. Typical drive is 85 watts to give over 1000 watts PEP SSB and 850 watts CW RF output. A new Pi-L output circuit for 80 and 160 gives full band coverage and exceptionally smooth tuning.

The AL-80A will provide a signal output that is within 1/2 "S" unit of the signal output of the most expensive amplifier on the market—and at much lower cost. Size: 15½"D.x14"W.x8"H. Weight: 52 lbs.

NEW AMERITRON RCS-4 REMOTE COAX SWITCH

Available at your dealer. Send for a catalog of the complete **AMERITRON** line.



The Ameritron RCS-4 is a remote controlled coax switch that selects one of four antennas by supplying all control voltages through the coax feed line. The elimination of a control cable results in a neat and inexpensive installation.

The indoor control console has bright LED antenna selection indicators.

The remote relay box is tower or mast mounted with a single clamp.

The RCS-4 operates from 120 VAC and covers frequencies from 1.8 through 30 MHz at full legal power.

AMERITRON, DIVISION OF PRIME INSTRUMENTS, INC.
9805 WALFORD AVENUE • CLEVELAND, OHIO 44102 • (216) 651-1740

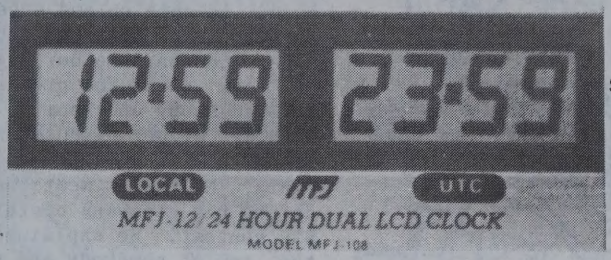
BEST OF MFJ

MFJ 24 HOUR LCD CLOCKS

These MFJ 24 hour clocks make your DXing, contesting, logging and SKEDing easier, more precise.

Read both UTC and local time at a glance with the MFJ-108, $19.95, dual clock that displays 24 and 12 hour time simultaneously. Or choose the **MFJ-107, $9.95** single clock for 24 hour UTC time.

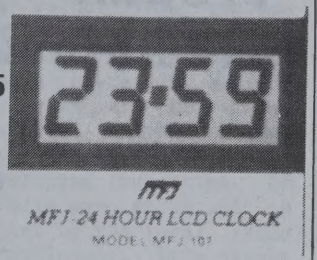
Both are mounted in a brushed aluminum frame, feature **huge easy-to-see 5/8 inch LCD numerals** and a sloped face that makes reading across-the-shack easy and pleasant.



You can read hour, minute, second, month and day and operate them in an alternating time-date display mode. You can also **synchronize them to WWV** for split-second timing. Both are **quartz controlled** for excellent accuracy.

MFJ-108 **$19.95**

MFJ-107 **$9.95**



They are **battery operated** so you don't have to reset them after a power failure, and battery operation makes them suitable for mobile and portable use. Long life battery included.

MFJ-108 is 4½x1x2 in. MFJ-107 is 2¼x1x2 in.

RTTY/ASCII/AMTOR/CW COMPUTER INTERFACE MFJ-1229 $179.95

Everything you need is included for sending and receiving RTTY/ASCII/CW on a Commodore 64 or VIC-20 and your ham rig. You get MFJ's most advanced computer interface, software on tape and all cables. Just plug in and operate.

The MFJ-1229 is a general purpose computer interface that will never be obsolete. An internal DIP switch, TTL and RS-232 ports lets you adapt the MFJ-1229 to nearly any home computer and even operate AMTOR with appropriate software.

A crosshair "scope" LED tuning array makes accurate tuning fast, easy and precise.

You can transmit both narrow (170 Hz) and wide (850 Hz) shift while the variable shift tuning lets you copy any shift (100-1000 Hz) and any speed (5-100 wpm, 0-300 baud ASCII).

Automatic threshold correction and sharp multi-pole active filters give good copy under severe QRM, weak signal and selective fading.

There's an FM (limiting) mode for easy trouble-free tuning that's best for general use and an AM (non-limiting) mode that gives superior performance under weak signals and heavy QRM.

A handy Normal/Reverse switch eliminates re-tuning while checking for inverted RTTY.

An extra sharp 800 Hz CW filter really separates the signals for excellent copy.

12½ x 12½ x 6 inches. Uses floating 18 VDC or 110 VAC with MFJ-1312, $9.95.

MFJ PORTABLE ANTENNA

MFJ's Portable Antenna lets you operate 40, 30, 20, 18, 15, 12, 10 meters from apartments, motels, camp sites, vacation spots, any electrically clear location where space for full size antenna is a problem.

A telescoping whip (extends 54 in.) is mounted on self-standing 5½ x 6¾ x 2¼ inch Phenolic case. Built-in antenna tuner, field strenght meter. 50 feet coax. Complete multi-band portable antenna system that you can use nearly anywhere. 300 watts PEP.

MFJ-1621 **$79.95**

MFJ ANTENNA BRIDGE MFJ-204B $79.95

Now you can quickly optimize your antenna for peak performance with this portable, totally self-contained antenna bridge that you can take to your antenna site—no other equipment is needed.

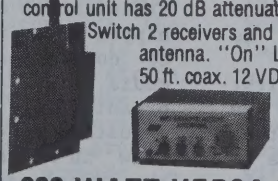
You can determine if your antenna is too long or too short, measure its resonant frequency and antenna resistance to 500 ohms. It's the easiest and most convenient way to determine antenna performance available today to anyone. There's nothing else like it and only MFJ has it. Built-in resistance bridge, null meter and tunable oscillator-driver (1.8-30 MHz). Uses 9 V battery. 4 x 2 x 2 inches.

REMOTE ACTIVE ANTENNA

The authoritative "World Radio TV Handbook" rates the MFJ-1024 as "a first-rate easy-to-operate active antenna ... Quiet, with excellent dynamic range and good gain ... Very low noise factor ... Broad frequency coverage ... the MFJ-1024 is an excellent choice in an active antenna"

54 inch remote active antenna mounts outdoor away from electrical noise for maximum signal and minimum noise pickup. Often outperforms long-wire hundreds of feet long. Mount anywhere-atop houses, buildings, balconies, apartments, ships.

Use with any radio to receive strong clear signals from all over the world. 50 KHz to 30 MHz. High dynamic range eliminates intermodulation. Inside control unit has 20 dB attenuator, gain control. Switch 2 receivers and auxiliary or active antenna. "On" LED. 6 x 2 x 5 in. 50 ft. coax. 12 VDC or 110 VAC with MFJ-1312, $9.95.



MFJ-1024 **$129.95**

200 WATT VERSA TUNER MFJ-901B $59.95

MFJ's smallest 200 watt Versa Tuner matches coax, random wires and balanced lines from 1.8 thru 30 MHz. Works with all solid state and tube rigs. Very popular for use between transceiver and final amplifier. Efficient air-wound inductor gives more watts out. 4:1 balun, 5x2x6 in.

ROLLER INDUCTOR TUNER

MFJ-989 **$329.95**

Meet the "Versa Tuner V", the compact roller inductor tuner that lets you run up to 3 KW PEP and match everthing from 1.8 to 30 MHz.

Designed to match the new smaller rigs, the MFJ-989 is the best roller inductor tuner produced by MFJ. Our roller inductor tuner features a 3-digit turn counter plus a spinner knob for precise inductance control for maximum SWR reduction. Just take a look at all these other great features! **Built-in 300 watt, 50 ohm dummy load, built-in 4:1 balun and a built-in lighted meter** that reads SWR and forward and reflected power in 2 ranges (200 and 2000 watts). Accuracy ±10% full scale. Meter light requires 12 VDC. 6 position antenna switch. 10¾ x 4½ x 15 inches.

MFJ "DRY" DUMMY LOADS

MFJ-262 **$64.95**

MFJ-260 **$26.95**

MFJ's "Dry" dummy loads are air cooled—no messy oil. Just right for tests and fast tune up. Non-inductive 50 ohm resistor in aluminum housing with SO-239. Full load to 30 seconds, de-rating curve to 5 minutes. **MFJ-260 (300 watt)**, SWR 1.1:1 to 30 MHz, 1.5:1, 30-160 MHz, 2½x2½x7 in. **MFJ-262 (1 KW)**, SWR 1.5:1 to 30 MHz, 3x3x13 inches.

MFJ ELECTRONIC KEYER

MFJ-407 **$69.95**

MFJ-407 Deluxe Electronic Keyer sends iambic, automatic, semi-auto or manual. Use squeeze, single lever or straight key. Plus/minus keying. 8 to 50 WPM. Speed, weight, tone, volume controls. On/Off, Tune, Semi-auto switches. Speaker. RF proof. 7 x 2 x 6 inches. Uses 9 V battery, 6-9 VDC or 110 VAC with AC adapter, MFJ-1305, $9.95.

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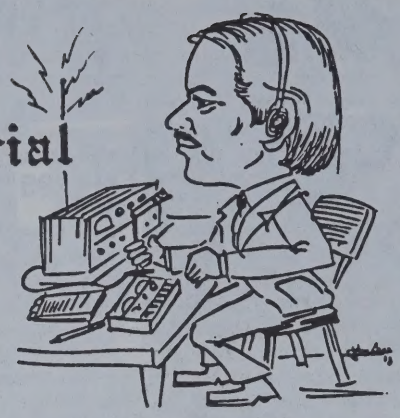


We survived Dayton Hamvention! It was the biggest ever. Organizers ran out of the 28,000 tickets on the second day and had to print more in a hurry. The forums were packed, exhibitors had a ball and the flea market was as usual - the greatest in the world.

We were in our booth for most of the time, I didn't get a chance to look through the exhibits or the flea market as I would have liked too. This was offset by the pleasure of meeting so many of you and having an eyeball, be it at the *RADIOSPORTING* booth or in the hospitality suites. There were a few pleasant surprises in "discovering" some of our friends, contributors and famous hams. We knew them, but we have never seen them, nor their pictures. Many didn't even wear their badge so that they were able to walk peacefully through the Hamvention. It was great to meet and shake hands with all of you, and to hear your ideas and comments about our magazine and the events that we sponsor. We were delighted to meet and have in our booth some of our writers: Ken, K7GCO; Bill, W4GF; Dennis, N7CKD; Paula, WB9TBU; Mike, AB0X; Wayne, N2FB; Larry, W3CV and many others.

At times it was hectic and some probably didn't get through the "pileups" but we had more time in the hospitality suites at Stouffer's. Discussions on various subjects were going on well into the early morning hours.

The DX forum was interrupted with an evacuation because of an electrical fire and there was a power outage on Sunday noon which delayed the prize draw, but thanks to organizers and flawless communication there was no panic and everything continued as planned.

Those who attended the Hamvention for the first time were simply overwhelmed by the size and activities there. How many countries have more than 28,000 hams licensed? They came from all corners of the world and promissed to be back. Again, the Hamvention Committee has to be congratulated on a job well done. It was hardly evident that this was the biggest crowd ever; all went quite smoothly. It was refreshing to see signs and billboards throughout Dayton welcoming hams rather then saying that we will be prosecuted.

At the DX and Contest Forums we informed everyone about the ongoing court battle of Jack Ravenscroft, VE3SR, and thus collected $96.00 for Jack at our booth. WM4T was also there and presented his case. Many thanks to all of you who donated and may you never have similar problems with your neighbors. It looks like Jack is going to appeal as a result of the support he has received from the ham radio community. He is going to fight for all of us here in Canada. See more on that in VE3KZE's column.

We were pleased to see those of you, who were waiting to see if *RADIOSPORTING* was going to fade away, to come up and subscribe. We appreciate your support and also the support of advertisers in order to continue our healthy growth. Please keep up your quest for preserving the sanity in our beloved hobby and sport.

Some of our discussions were eye openers. One young operator (a hired gun) from a station that Clara, NO/FOOL, mentioned in her beef, tried to defend his stomping operating techniques in the WPX SSB contest. He explained that it is OK to tune on the top of somebody and start calling CQ because contests are fun and this is supposed to be one way of having fun. Well, it may be fun for him, but it sure is no fun for someone who is serious about contesting, its rules and ethics. There are moments when the frequency appears to be quiet or not in use because the station is trying to dig out the weak one. When a contesters starts calling CQ on a frequency like that and then is told that the frequency was in use, the gentleman and the law abiding ham would say: "I am sorry" and move on. It is illegal to interfere with other communications and the old contest tigers don't do things like that. They respect each other. Contesters are a true sportsmen, they enjoy meeting each other and they continue this friendship even after they try to cream each other in the contests. This problem is usually with some of the newer operators. When they get the opportunity to operate a big station, they think that they have the license to kill. Could this be a carry over from the CB manners?

Another well known contester said that he did not subscribe to our magazine because we are "anti ARRL." It appears that he considers the ARRL to be above reproach and criticism. Let me make my position clear. I was and still am an ARRL member from as far back as OK3BU. I believe that we need an organization such as the ARRL to keep us united and to represent us to the rest of the world. But we also need the ARRL to help us and do things for us so that we may all enjoy our hobby.

When an organization gets big, a certain amount of bureaucracy creeps in. When the majority of the people running the organization are in it for the prestige of being there rather for what they can do to help the cause, then the objectives of the organization are lost. We understand that mistakes happen but, if there is no action taken as a result of correspondence, then some pressure from the media might help. It is for the good of the organization and all of us that we try to get results. We mention a specific case with another view in hopes to get the problems corrected. Did the gentleman in question cancel his Time magazine subscription because they wrote that Nixon was ...? Let's kill the messenger and "solve" the problem?

We provide the media and we would like to have a discussion on some of the acute subjects going. If you don't like something, take a pen or a keyboard and write us. Let's discuss the problems and let's hear your opinions especially from the experienced hams from around the world. Let's arrive at some kind of consensus and all abide by it. One sided decisions could be fine right here, but they might be wrong way out there. (See the comments by LZ2CJ on 160 m band plan.)

I guess we should not waist our time and energy on trying to solve someone else's problems if they don't appreciate it. Instead we will concentrate

on things closer to our hearts and try to make them attractive for you. You, the readers will have the choice and a final vote.

We had quite a discussion about our WRC contest collision with the California QSO Party falling on the same weekend. Apparently, in California, this party is a big thing. Because we have hardly seen any results from this contest, from here it looked like "just another QSO party." California, the most ham radio populous state, sees it in a different way. Finally, at around five o'clock in the morning, we arrived at some kind of understanding and a possible solution. The final word is that for this year, the CQP will be held one weekend earlier, thus freeing it for the WRC. Next year, our WRC contest will most likely be held on our originally proposed date, the last weekend of September. Many of you preferred not to get our dates too close to the CQ WW Phone contest at the end of October. During my discussion with OH2BH there was some indication that perhaps some kind of compromise with the Scandinavian Activity Contest is possible. We sure hope that we can find a permanent spot on the contesting calendar for the WRC contest soon. We received many positive comments on our rules and are looking forward to our first run this year. Contesters from around the world will appreciate any help in this direction and will be eternally thankful to all of you who will help to get the WRC contest off the ground.

We are still open for comments and suggestions on how to improve the rules. The forms will be completed soon and will be mailed to all IARU member societies and all those who requested them. We will have more on the WRC contest in our next issue.

Another hot subject is the question of guest operators. Some people feel that guests should have a separate category in the contest results. This question is primarily acute for the ARRL Sweepstakes entrants. It is not unusual to see eight stations, (usually big multi - operator, superstation installations), out of the top ten to be operated by a guest operator. Let's start a new terminology - GO for the Guest Operator and OO for the Owner Operator. The OOs feel that superstations should compete in the multi operator category. Another sub-category in the GO discussion is the operation in the DX contests like CQ WW, WPX and others. The GO visits usually a rare or otherwise advantageous station. This case is not of much concern to OOs, because in the major contests the rules do not allow direct comparison of skills or scores. One operating from South America or Africa is right away better by about 30 percent, due to the distribution of stations and scoring system. The GOs actually do quite a bit to promote contesting in other countries and provide a precious multiplier for the rest of the competitors. Many GOs help to refurbish the antennas and equipment at their host's station and show the host how to have fun operating the contest and perhaps how to make a record run.

The question of GO was brought up at the Contest Forum at Hamvention. Generally the opinion was: why have another category and dilute the competition? Perhaps then, we should reward the OOs among the mixed GO and OO competition with trophies for OO category. This way, the OOs will also be recognized while competing with the other single operators riding someone else's horse.

If the GO goes to operate someone else's station, then he should use the host's callsign. This gives the host the recognition who after all, provided the location and a station. Listing the operator's callsign in the results will provide the recognition to the operator too. The majority of contesters agree to this rather than someone walking in into a superstation and firing it up with his own callsign. One has to remember to observe rules and ethics when operating another station, as not to get the host into hot water because the guest operator's actions. Many contesters and DXpeditioners do an excellent public relations mission in developing countries by working with the local ham radio population and in some instances helping to set up the local radio clubs and even donating the equipment. This almost guarantees a growing number of multipliers in the contests. The "natives" will catch the bug and will be back in the next one.

A very interesting subject was brought up by Frank, W3LPL, during his presentation on propagation at the Hamvention Antenna Forum: "Vertical vs. Horizontal nights." On low bands there are prevailing propagation modes enhancing propagation of horizontally polarized signals on some nights and vertically polarized signals on other nights. My first impression was that perhaps it might have more to do with angles of radiation produced by the horizontal antennas as compared to verticals. But apparently, it is really the polarization that makes the difference and makes verticals, or horizontal antennas play better at different times. One would need a set of vertical and high horizontal antennas to do some kind of testing. Has anyone experienced this phenomena? Please let us know.

I had the pleasure of talking to Rick, K5UR, in the hospitality suite. Rick has done the "impossible" on the 160 meter band. He has achieved contest scores and set records from a location that everyone said is useless for competition because "you can't compete with East Coast." This is due to a combination of the carefully tuned antenna farm and it's location. I was pleased to find some proof for my conductive radiowave propagation theory and to explain the mystery of Rick's success. Rick has promised to write something for us, so we will have more on this subject later.

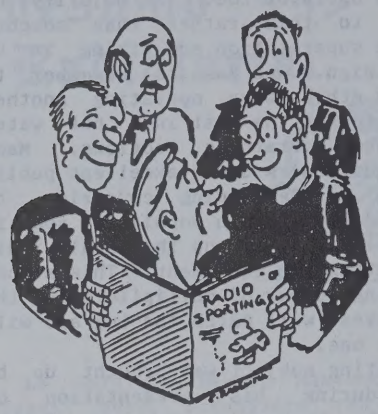
The date of our WRC contest is getting closer. As soon as this issue is out, we will finalize the forms, and come up with a proposed standard and format for the computerized contest log keeping. More and more contesters are using computers for logging. We need a standard format that could be used by all. Then we can submit the logs on diskettes or over the modem (or radio) and have them available for processing on the sponsor's computer. Computerized checking will be possible with a minimum effort. We should have more on that in the next issue.

We welcome our VHF/UHF/SHF (should we call it VUSHF?) friends to our coverage of this area of radio sportsmen. We hope that many of you will join our ranks and enjoy this fast and fresh magazine of sporting radiomen. We welcome articles on operating and technical aspects of VUSHF, so don't be shy!

Finally I have managed to configure our printer for WordPerfect program, still, the proportional spacing has to be implemented. The next issue will have proportionally spaced text and better looks. We should also be closer to our scheduled mailing date - the 10th of the month. Thanks for your patience!

73, de Yuri

DX NEWS



ART HUBERT, N2AU

The DX news from around the world as exchanged on the IRSA net and from other sources: KA2AJT, N4DUG, WBAH, KSOM, WOZV, K4LTA, W5KNE, F6BEE, W6RGG, 7SOTM, ZS6RM, K5OVC, TU4BR, WA2QNW, UM8MIR, The SAT Tablet, QRZ DX, The DX Bulletin, QST, CQ Magazine, VE3LZS, Inside DX and KE2C.
The IRSA net operates on Sundays around 14.200 MHz, starting at 2000 Z and 3.830 (Mondays and Fridays at 0200 Z).

Last month we discussed DX bulletins published in North America, to help you work that new one. This month we will look at bulletins published outside North America. Also, we will take a look at a few publications which help you track down those QSL routes once you have worked that needed one.

DX News Sheet - G4DYO, editor - weekly on an A4 sheet on both sides. DX information, QSL routes, QSN section, articles and an awards section. For more information write: RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JW, England.

Les Nouvelles DX - FE6AJA, editor - bi-weekly printed in French on 8 1/2 by 11 sheet and consists of 2 pages which include DX information, articles, QSL routes, QSN section and a propagation section. For more details write: Jean Duthilleul, FE6AJA, 515 rue de Petet Hem, Bouvignies, F-59870 Marchiennes, France.

DX News Letter (DX-NL) - DL3RK, editor - published weekly in German on a single sheet which includes DX news, QSL information, articles and a QSN section. For additional information write: DARC, Erich Wagner, DL1LD, Flurweg 23, D-4444, Bentheim 1, West Germany.

DXpress - PA0GAM, editor - written weekly and published in Dutch and English. Format is in booklet form of 4 pages which contains DX information, articles, QSL routes and a VHF section. For information about the publication write: PA0GAM, Oldenoert 152, NL-9351 KT Leek, Netherlands.

DX Family News Letter - JH1KRC, editor - published monthly in English and weekly in Japanese. Consists of approximately ten pages containing DX information, articles, and lots of photos. for more information write to: The DX Family Foundation, POB 12, Shinjukukita - Ochiai, Tokyo 161, Japan.

S-9 - JA1ELY, editor - monthly in a magazine format consisting of 20 or more pages written in Japanese. Has DX articles, QSN section, QSL routes, technical articles and lots of photos. For additional information write JA1ELY via Callbook address.

These are the DX bulletins that I know about. If there are any which I have overlooked, please drop me a note or a sample copy and I will write it up in a later column. Please remember when writing for information on these bulletins to include sufficient return postage. The following publications deal with QSL routes and propagation forecasts.

The W6GO-K6HHD QSL Manager List - W6GO and K6HHD, editors - printed monthly and consists of 4 pages of newspaper size, listing up to date QSL routes. For a sample copy send you name and address with sufficient postage to: The W6GO-K6HHD QSL List, Box 700, Rio Linda, CA 95673 - 0700.

QSL Managers Directory - WB4KCL, editor - has over 12,000 listings with updates available. Price is $14.95 for US & VE, for more details write: Fred Smith, WB4KCL, 2265 Sweetbriar Drive, Alexandria, VA 22307.

QSL Report - JH1HWN, editor - printed monthly, listing the latest QSL routes and managers. More details available via QSL Report, No. 2, Kikyo Bldg. 401, Miyamae-Ku, Kawasaki City, Kanagawa 213, Japan.

QSL INFO & MOST COMPLETE QSL LIST EVER PUBLISHED - editor of both volumes is SM5CAK. The first includes the latest in QSL routes, while the second has up to date QSL info for stations active in the early 60's. The North Hill Rd., McHenry, IL 60050 or via SM5CAK.

The KH6BZF Report - KH6BZF, editor - a weekly report on propagation. Single sheet format with additional info to aid the active DXer on the backside. Send an Sase to KH6BZF Callbook address.

DX NETS AROUND THE WORLD - OE2DYL, editor - fifth edition list 100 active DX nets from around the world. Dieter also publishes a DXCC COUNTRY LIST available for 5 IRCs. If interested write to: Dieter Konrad, OE2DYL, Bessarabiestr 39, A5020 Salzburg, Austria.

If anyone has details on other aids to the DXer, drop me a note describing them. If you are like your DX editor, you never can get enough DX information. I usually end up with one of each, cluttering my ham shack and a few other rooms, much to the dismay of my XYL.

Received a letter from Bill, K4LTA, avid DXer from Tennessee, who visits the Caribbean Islands yearly activating one or more during the ARRL Contests. Here is Bill's informative letter on the Grenada DXpedition of 1986.

Summary of 1986 DXpedition to Grenada

Our group consisted of: Bill, K4LTA; Ruby, N4FKO; Tod, N4KOV; Polly, N4MMV; Dave, W5PWG; Ethel a non-ham, of West Columbia, TX; Chuck, KØOSN; Ruth, WA8FSX; Dick, NF5Z and Bob, N6LHN. We all arrived in Miami, FL on February 12 an took the BWI Flight #401, with stops in Antigua and St. Lucia, before arriving in Grenada, where we were met by Don, J37AH, who had already been helpful by helping us obtain our Grenada licenses. We stayed at the Reveria Motel duplex cottages, located on Grand Anse Beach, near the medical school, about two miles south of St. George. It was a lovely spot with tall coconut palm trees to hoist my 160 meter dipole.

Within two hours of our arrival we had a temporary 40 meter dipole up and were on the air as J34LTA. Other special calls in our group were J34WG, J34HN and J34Z which we used in both the CW and SSB DX contests. My station consisted of my TenTec Corsair (it's fourth trip to the Caribbean), Ameritron AL-80 amplifier, AEA keyer and Butternut vertical and 160 dipole. NF5Z had a station using his Kenwood 430S, a Heath amplifier and Butternut vertical. KØOSN also had a Kenwood 430S and a vertical antenna. We had a total of approximately 19,500 QSOs, 15,000 of which were on CW, 3,400 in the CW contest and 4,007 in the phone contest. I was pleased to have 950 QSOs on 160 meters, including 140 European contacts. Disappointing was the fact that 21 and 28 MHz were so poor and that we did not get any good openings to Japan on any bands.

It was a big day when President Reagan came to Grenada on February 20. We were particularly impressed with the friendliness of the people of Grenada and especially the Amateurs who live there. When we left Tennessee on February 12, the temperature was 14 degrees F. While we were in Grenada for three weeks, it was always between 75 and 85 degrees, almost a perfect climate. In closing, thanks for your QSL cards. Any extra postage or IRC's are very much appreciated as the QSL expenses mount. We found out that quite a few of our fraternity are not thoughtful enough to send return postage for their cards.

73 de Bill O'Kain, K4LTA/J34LTA

DX RAMBLINGS

Unfortunately, the KM1R operation from XV in early April did not materialize. The Vietnamese broke off the talks because of the 5A conflict.

ZL1AMO's operation from ZK3 was cut short, the reason given was due to the lack of AC power after dark. It turned out that Ron and ZL1BQD canceled the rest of their DXpedition and went back to ZL land, so no operation took place from ZK1. A disappointment to quite a few DXers.

7SØTM will be active all of 1986, celebrating the 50 year anniversary of the Museum of Science in Stockholm. Activity will be on all bands, CW and SSB. QSL via SKØTM or via the SM buro.

If you worked FF3TV during the SSB or CW WPX Contest. QSL via F6BEE. They made over 3,000 QSOs in the SSB portion of the contest.

More bad news for DXers. The new replacement crew has arrived on Marion Island (ZS2) without ZS6AOJ who was not allowed to go because of a failed physical test. So it will be at least 18 to 24 months before there will be another chance of an amateur to be part of the Marion Island crew.

The Clipperton crew, FOOXX was not allowed to land on XF4 because the Mexican Government refused to renew the license. QRZ DX reported that the French Government was considering settling up Clipperton as a stopping off point for fishing vessels. It could possibly become a garden variety DX. Also, the latest group to activate Clipperton stated that their main reason for going back was to provide Europe and Africa with a shot at FO8C. They listed their operating frequencies in the American Phone bands, 14195, etc. Chod Harris, the new DX editor for The DX Bulletin made a valid comment: if they are so keen on working other than stateside, why don't they work in the DX band, e.g. 14140 etc. where only DX stations are allowed. Sometimes the obvious is overlooked.

The BVOBG cards are being printed in Taiwan and will not be mailed until June or July. The QSL route for this one is via W3USS.

TU4BR, Alan, finished his stint in early May and his next assignment is in 5U7 where he hopes to obtain operating permission. If he is successful, his fine operating skills would remove 5U7 form the wanted list of many DXers.

9H3DX will be operated by DF2UU on July 11 to 31 on all bands CW and SSB. QSL via DF2UU.

K8MFO and others will try to activate Market Reef (OHO) in early July.

Several UM8s will fire up from Oblast 177 in late May or early June. This is a rare Oblast, very little activity has taken place from here. The callsign will be UM8P.

The first three recipients of the WAZ-50 award are N4JF, W8AH and K2TQC.

By the time you read this, the ARRL DXAC will have voted on whether Aruba (P4) will become a new one.

According to the DX Bulletin, JA1UT is in the process of trying to reactivate Amateur Radio in XW. He helped XU to become active in 1983, lets hope he becomes successful in 1986.

At the time this column was written no documentation has been received by the ARRL DXCC Desk on the latest DL7FT/SV/A operation.

The summer months mean DX season for our VHF brothers. The G stations and several EI stations have received 6 meter operating privileges, with several other European countries trying for 6 meter operating privileges. You may remember that last summer produced the first G to North America sporadic E skip contacts recorded. Lets hope that this season produces many more.

In closing here is an article which appeared in The DX Bulletin on the next two upcoming sunspot cycles:

What is radio propagation going to be like for the next twenty years? Professor Robert Helliwell went out on a limb at the Visalia International DX Convention by going public with sunspot predictions for the rest of the century, thanks to the results of a mathematical analysis of the last 2000 years of sunspot cycles, and projected this model over the next two cycles.

The good news: his prediction shows the next cycle picking up in mid-1986, and rising steeply. The bad news: the next two sunspot peaks, due in 1991 to 1992 and 2003 to 2004 will not even match the last peak in 1981, much less the legendary late 50's peak. He predicts peak sunspot numbers near 120 for both the next two cycles, versus 150 in 1981 and 200 in 1957. However, with modern radios and increasing numbers of amateurs around the world, things will be exciting for the patient true-blue DXer. All we have to do is tough it out for another year, according to the scientists at Stanford.

Your editor remembers the predictions for this last cycle: estimated sunspot number was between 80-100 and would be getting lower over the next several cycles. Lets hope that they are again low on their estimate. According to most experts on sunspot cycles, the sun is full of surprises we don't yet understand.

The best of DX and luck to you.
73, Art, N2AU

INSIDE DX

Weekly DX bulletin for the active DXer published by N2AU. For a sample copy and subscription rates, write to: Inside DX, 436 N. Geneva St., Ithaca, NY. 14850

WRC MULTI-SINGLE TROPHY

The Greater Milwaukee DX Association is sponsoring Trophy for our World Radio Championship Contest - World High, Multi Operator - Single Transmitter Phone category. Our thanks to GMDXA and its secretary Syl Janczak, WD9JKZ.

QSL ROUTES

AZ1ARU	-LU6FAZ	OX3LX	-OZ1DJJ	XEFJTW/XEØ	-AA5B
AZ5ZA	-LU2A	OY5NS	-W3HNK	OE3EMK/YK	-OE3SFW
A35EA	-ZL1AMO	PJ8BFS	-SM5AQD	YS9JY	-NF5J
A35ZK	-JJ1TZK	PJ9J	-W1AX	YT2AA	-YU2SEV
A92NH	-NG8S	PJØB	-K3EST	YT3W	-YU3FOP
DL8NAZ/CP8	-CP8AL	PP8ZAT	-KC8YW	YT4I	-YU4EBL
CQ8UA	-W3HNK	PQ8ZZ	-PY4AG	ZD7SE	-KA1DE
CQØAHU	-CT1AHU	PY1CRP/PQ8	-PY1DFF	ZF1IC	-VE3ODX
CR8CDL	-CT1CDL	PY4WAS/PU8	-PY4AG	ZF1MM	-VE5RA
CSØAT	-CT4AT	PYØFI	-W4BAA	ZF1MM/ZF8	-VE5RA
CT8NH	-W3HNK	PZ5JR/7	-K3BYV	ZF1MM/ZF9	-VE5RA
C21NI	-JJ1TZK(Feb. & Mar 86)			ZF2GW	-W2HPF
C6ADJ	-DJ3BW	P29SS	-ZL1BRS	ZK1XR	-JJ1TZK(Feb
DPØGVN	-DJ4SO	RU4CG	-UA4CK	ZK3RR	-ZL1BQD 86)
K1BAZ/DV1	-K1BAZ	SM7CRW	-W3HNK	ZK3RW	-ZL1AMO
D68WS	-DJ6QT(85 CBA or earlier)			ZLØAHB	-G3VIE
OH8NW/EA8	-OH8NW	DL7FT/SV/A	-DL7FT	ZS1OU	-KA3FIB
ED5PAD	-EA5BQS	AH3AC/TF	-KB2RV	ZS3BI	-DF2AL
EK9AD	-UZ9CWW	KA2ATM/TF	-KA2ATM	W6QL/Z2	-YASME
EKØDR	-RW3DR	KC2TU/TF	-K2SDD	3A6E	-F9RM
EL2AY	-N5GAP	TG4VT	-W3HNK	3A6F	-3A2LF
EL2EF	-KM8E	TI1A	-TI2CCC	3C1MB	-EA7KF
EL8E/7	-GM4LDU	TL8MEF	-F6KNT	3D2GB	-W2GBX
EN3D	-UZ3DXC	F6DCL/TL8	-F6KGI	3D2JA	-JJ1TZK
FM5CT	-N7RO	TV5SDP	-FC1JEN	3G3DX	-CE3ESS
FO8BI	-F6HSI	TV6BFI	-F6BFI	3V8PS	-I1FOU
FOØBRS	-W2GBX	TZ6LPY	-IØLPY	3XØHSH	-DK8PR
FP4CJ	-F6FNU	T21TA	-N4FJL	3Y9WT	-LA9WT
DF5IW/FR	-DF5IW	T21ZK	-JJ1TZK	4N2AA	-YU2NFJ
GB2SDD	-GW4HOQ	T3ØAC	-AA6BB	JR4QZH/4S7	-JR4QZH
HG1Z	-HA1XY	UA1OT	-UB5KW	4X4KF	-K3STM
HG7B	-HA7KSR	UF7FWW	-UF6FFF	5B4MF	-IK8DYD
HL9EP	-KØVZR	VE2FGG	-VE3JDO	5H3BH	-SMØEAI
HV3SJ	-IØDUD	VK4FCC	-W2GBX	5H3ZR	-OH6IQ
IK4CXL/IA5	-I5NQZ	VKØSJ	-VK7RM	5N8AFE	-DL6HAT
JA1LZO/JD1	-JM1LPN	VP2MDB	-W2WSE	5N8BAV	-I2ZGC
JW1LK	-LA1LK	VP5DG	-KA5DGE	5NØJCR	-DL2NAA
J34HN	-N6LHN	VP5Y	-N6EK	KA4EDK/5NØ	-K4JZQ
J34LTA	-K4LTA	VP5Z	-KC2RS	5R8AL	-WA4VDE
J37XC	-W2BJI	KD2HE/VP9	-KD2HE	5T5RG	-F6FNU
J39BS	-WB2LCH	VQ9SK	-WA6SKS	5W1CW	-ZL1AMO
I5JEO/KC6	-I5JEO	K9EL/VS6	-K9EL	5W1FP	-ZL1BQD
AI6V/KH6	-AI6V	V3DA	-W3UM	7J3AAB	-JARL
KB1HM/KJ6	-KB1HM	V3DG	-N5DVY	8P6AR	-N6AUV
LZ7A	-LZ2KTS	V44KG	-WB2LCH	8P6GG	-N4CTC
L4D	-LU4DCK	V47K	-WBØMIV	9J2LC	-YASME
NP4A	-W3HNK	V47M	-NIØE	9X5DH	-DK6EA
OA4SS	-KB2J	WP4G	-KP4FH		
		XE2XGY	-KD5GY		

CN8LS- Box 3007, Casablanca, Morocco
EL2AA- Manuel Garcia, Box 275, Monrovia, Liberia
EL2BO- Johothan Dean, Box 1689, Monrovia, Liberia
EL2M- Mildred Dean, Box 1689, Monrovia, Liberia
OD5AS- Said Abdallah, Box 121, Tripoli, Lebanon 604
OD5QS- XYL of OD5AS same address

160 m

Top Band News Americas

Dennis Peterson, N7CKD

4248 A Street SE, Sp. #609, Auburn, WA 98002 Tel. (206) 833-7243

160 m ANTENNAS

Everyone seems to want to read more about antennas for 160 meters. Unfortunately, my library of information is very limited. Most of the antenna information that I write about is mostly personal experiences and findings experienced by myself from a small lot space here in Auburn, Washington. As I have stated many times, when you live in an area which allows you a 55' x 90' piece of property to put Amateur antennas on; you have to make do with what you have and try to achieve the optimum results for the circumstances at hand.

I guess in essence you could say that 160 meters offers anyone with a bit of patience and perseverance one of the most challenging experiences he/she will ever endure on any of the amateur bands.

Nearly two years ago, I wrote a manuscript for possible publication into book form, called 160 Meter DXing ** "A BAND WITH MANY CHALLENGES". The purpose of the book was to expose the new operator on 160 towards an easy method of getting on the band, but not to overlook the frustrating times and problems that go along with the exciting ones. The manuscript was sent to CQ Magazine, but to date nothing has been said or heard.

To really appreciate what one has to use and operate with is to live in a mobile home park as I do or even on a very small city lot and make every square inch of property work for you. During the past several weeks since joining *RADIOSPORTING* magazine, I have received numerous letters in regards to increased information and material on ground screens, counterpoises, verticals, dipoles, loops, beverages and the like in my column on 160.

I would like to request once more from you, your experiences and findings on antennas, ground systems and or any other 160 related material which could be shared with our readers of *RADIOSPORTING*. I would like to hear from some of you whom are using shunt-fed towers; and the methods which you are using and have had considerable success with. Please write it up, give the complete dimensions/measurements and values of all components and specs.

If possible, include a detailed description of what you did and how to make the antenna play efficiently on top-band. I would like to have several different views on shunt-fed tower installations for comparison. Not everyone shunt-feeds the same way, and many of you I know have different views and practices for putting up such an installation. I hope my plea for your material doesn't go in vane. Hopefully, I can eventually put together a book containing much of the new antenna information with regards to our beloved top-band for easy reference and future use. If you have any antenna articles, information, or experiences, by all means please send them to me for publication. Please do your part in helping me to make this column one of the most informative and educational sources for top-band there is.

I am going to conclude this article by making a request for some information for myself and possibly a few others. I recently had a few problems with my Clipperton-L (Dentron Amplifier). It appears that the 2.5 A / 600 PIV diodes in the power supply are not sufficient. I replaced them with 3.0 A / 1000 PIV replacements (30s10). I have also lost the meter on the amplifier and am in need for a replacement; however, Dentron is no longer in business and I am not aware as to where to get replacement. Meter face is 3" across the front and 2 5/16" high approximately.

SPECIAL REQUEST

I would like to ask our readers who may have the knowledge about frequency allocation for some of the various African numerical prefix countries that I need for updating the TOP BAND FREQUENCY ALLOCATIONS LISTING. Please help me complete this rather unique listing. At present; 276/315 countries listed. This is 160 meters only.

CHICKEN-WIRE OR FENCING?

The question has been asked here recently in regards to the use of 1x2" vertical and horizontal wire backyard type fencing over the 1 inch mesh chicken-wire for the ground-screen. I don't really want to get into a deep discussion on which type would be better to use; however, if you take a close look at the two types of wire you will quickly notice that the chicken-wire is a twisted wire material that is usually around 20-gauge and is galvanized. The twists or wraps are spaced evenly and are very tightly twisted together. The other type of 1 x 2" wire fencing is actually welded together at each section and joint. Thus insuring a solid electrical connection throughout the system. The choice is actually going to lie in the hands of the builder and will depend upon whether he wants to spend more money on the ground system or do it as economical as possible. Some of the things to consider when choosing the type of fence might be observed in the following:

Chicken-wire is a 1" mesh constructed material with twisted joints and galvanized for extra strength and weather protection. It is constructed out of 20-gauge flexible steel and is sold in 50 foot rolls (in various heights, but the 48" is easier to handle and works out best when laying out the system) weighing 19 lbs. for the 48" size and costing $23.99/roll. A 50' square means that one would need 12 rolls at a cost of $287.88.

The backyard fencing of 1" x 2" mesh is a 14-gauge rust-resistant galvanized steel material and is available in various heights as well, but the 48" size again would be best. This wire is sold in 100' rolls only and weighs 118 lbs./roll at a cost of $99.99/roll. One roll could be cut in half giving you 2 50' rolls and therefore only requiring you to purchase 6 rolls at a cost of only $599.94. These prices are based on figures received from Sears, Roebuck & Co.. There are undoubtedly other places to obtain this wire at substantial savings over these figures. I'm sure you can see my reasoning for using the chicken-wire. The choice is yours; they both work well.

BELIEVE IT OR NOT

A recent QSO with WAØZHH/Chuck in Odessa, Texas led to the discussion of antennas.

Chuck has been experimenting with short vertical mobile antennas. These antennas range anywhere from 11 feet to 17 feet. They are supported by fiberglass rods and use a system of 36 brazing rods with some aluminum wire around the outside ends which serves as the capacity hat. At the base of the antenna is a 12 inch diameter coil made from copper tubing.

This antenna has been used at his current fixed location as well as mobile from both the automobile and the 18 wheeler. I have worked Chuck while he was mobile with this antenna and his signal was a good solid 58. This particular evening April 14, 1986 0400z Chuck is 59 + 20 dB with his 17 foot extended mobile antenna.

When Chuck first identified himself on frequency and called CQ, hearing him I thought it would be a good chance to test not only my system here but find out how well Chucks system was performing. I answered Chuck's CQ with only a 40 watts of power as I hadn't turned on the Clipperton-L yet. My report was 58 and aside from Chucks static crashes and the high noise level here, we were able to carry on a fairly decent QSO; but it was necessary for me to turn the amplifier on.

Chuck has told me that he will be sending me a photograph. Hopefully, I will also be able to talk him in to writing an article for this column to share with other operators the fun and excitement that Chuck is witnessing in 160 meter mobile operations.

For those operators who have talked with Chuck about his new mobile antennas, you know what I'm talking about. For those who have not, all I can say is that Chucks' signal is simply incredible. (N7CKD)

W8JI COMMENT

With reference to the article by Ted Rachwal, K8AQM, on his Sloping ZL

What a pileup of Top banders! Left to Right: G4AAW, 4X4NJ, G3ZFC, G4AKY, G3NKC, G3XTT, G4FPH, G3AIK, PAØHIP, G3RTY, G3SZA, G3YMC, G3SFT, G3KMA, GM3YOR, G6CJ, G3RBP, G3RFS, G3RAU, G3RBP, VP8ANT, G3PQA. (Tnx G3SZA)

Special which appeared in the April issue of the magazine page 8:

"Yes, I'm gonna comment on Ted's "phased slopers" again! I concede that almost any antenna will indeed radiate. The trick is to maximize the radiation in the direction desired or "claimed."

With cross-fire feed antennas the patterns are uni-directional and they fire towards the feedpoint. This is a simple and very well known fact. Examples are log periodics, TV antennas, KLM yagis, Hy-Gain yagis, etc.

To make Ted's antenna bi-directional it must be fed in the center of the phasing line. Please refer to any handbook published by antenna engineers, such as W8JK's book "Antennas."

The saving grace that makes Ted's system bi-directional is that the power supplied to the back element is very low. This is because the 450 ohm line acts as a transmission line transformer stepping the 50 ohm center impedance of the dipole up to several hundred ohms where it attaches to the feedline common point. Evidently, very little power is applied to the second element.

I tried, in the past, to suggest that properly treated the second element can add both gain and/or front to back ratio to the array. While I do not dispute the antenna radiates RF, I do have serious reservations why a second element that does virtually nothing is necessary! If you hang that copper in the air, use it to advantage or don't bother.

Tom Rauch, W8JI

THE BIG DIFFERENCE

I operated both modes of the CQ 160 Contest with W3GM (multi-operator) at his station using my callsign. (Another category? Ed.) The CW Contest was, by far, much better than the phone portion. This was fine with me as I'm mostly a CW Op anyway. The CW portion was great for European DX - I was even able to get some small runs going. The phone portion however, featured high noise and QRN levels and some strange propagation. Some of the locals here were barely audible at times! All in all, the phone contest ended up as a "Worked-All-States" contest.

The big difference seemed to be as follows: The transceiver was a TS-930S and the amp was a HB Monoband amp for 160 using 4-400's.

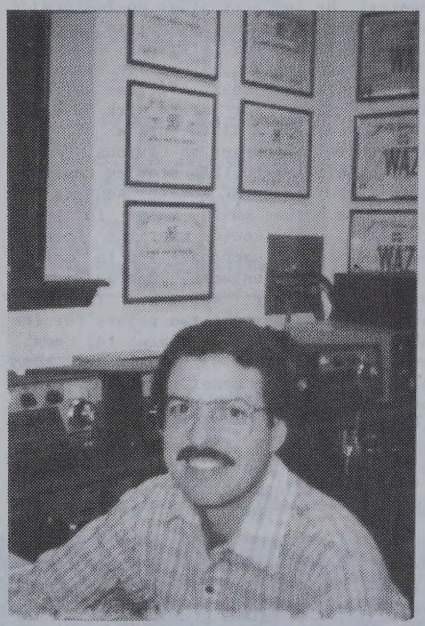
The antenna farm is rather elaborate and located on approximately 9 rural acres. The main transmitting array is a pair of phased verticals spaced 1/4 wavelength. The pattern is switchable unidirectional NE or SW and bidirectional NW/SE.

The verticals are 80 feet high and constructed of 4 inch irrigation pipe. Four wires approximately 25 feet long form a top hat to resonate the verticals on 1.830 MHZ. They work fantastic!

Another antenna is a full wave rectangular loop with the top at 100 feet and the bottom at 20 feet. It is fed in one of the lower corners. The remaining antennas are a 4X4NJ sloping wire vertical (South) and an inverted Vee at 90 feet. Even with all this hardware it was tough to work North Dakota on SSB!

As for receiving, we have four beverages (NE, E, S & W) all 550 to 600 feet in length. They are terminated and have a 9:1 transformer at the "feed" end.

Stew, K3ND



Rick, K5UR and his shack.

Dave, G3SZA and Rikki, 4X4NJ at Dave's shack. (Tnx G3SZA)

160 m DX News

Wally Stefanoff, LZ2CJ

PO Box 73, Levski, Bulgaria

With Dayton Hamvention and the CQ WPX CW contest out of the way, we are looking forward to the month of June. The activity on 160 meters in Europe is down a bit, but this is a good time to look for those who are approaching winter such as Africa, South America and Southern Pacific.

LETTERS

I have received a few letters in the past that deserve mentioning.

Lew, K4VX, sent some very interesting comments on scoring in the CQ 160 m contest. He and many other contesters do not agree with the 10 points per DX contact rule. For stations from the Midwest working VO1, it is the same feat as for the East Coast stations working Europe. Also, for me to work an EI is the same as for a GI to work a US. The difference in scoring is obvious.

One solution to this problem could be this: use the VHF Locator squares to determine the point value for the contacts. We could use the Locator squares in QSO exchanges and to assign the points for contacts. One point can be used for working immediate neighboring squares, two points for the next row of squares, three for next, etc. It might be difficult for some people to get the Locator map initially, but everyone should know his locator. It is used widely around the world for the VHF competitions. Also different Locator squares could be used as multipliers.

In my opinion, this system could make the 160 m contest both interesting and fair for most of us. Those who spent a lot of time and effort to build the antennas and equipment, will be rewarded for their effort with a better scoring system.

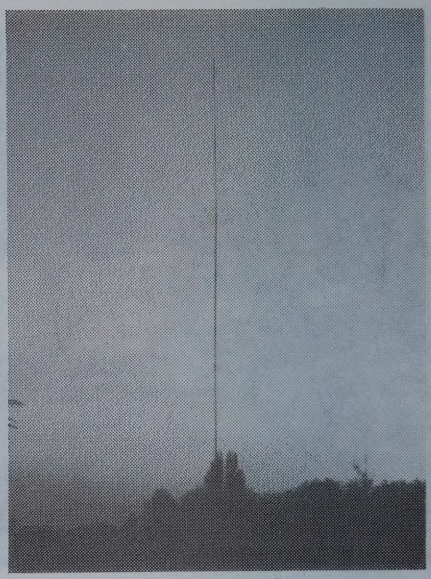
I will be happy to receive your comments on this subject. Suggestions and ideas should be proposed to Don, N4IN, in order to make this game interesting and fair for all participants. This would bring in more contesters making the competition more of a challenge.

Karlen, UG6GAW, wrote that he is working on a new transceiver and will be absent from the Top band for the next couple of months. He will also try out some new antennas during the coming season. Karlen has received QSL cards from KH6CC, FP5HL, V2A and VP5GEX and his standing is 117/141 (cfmd/wkd) giving him the No. 2 spot in Asia on 160 DXCC.

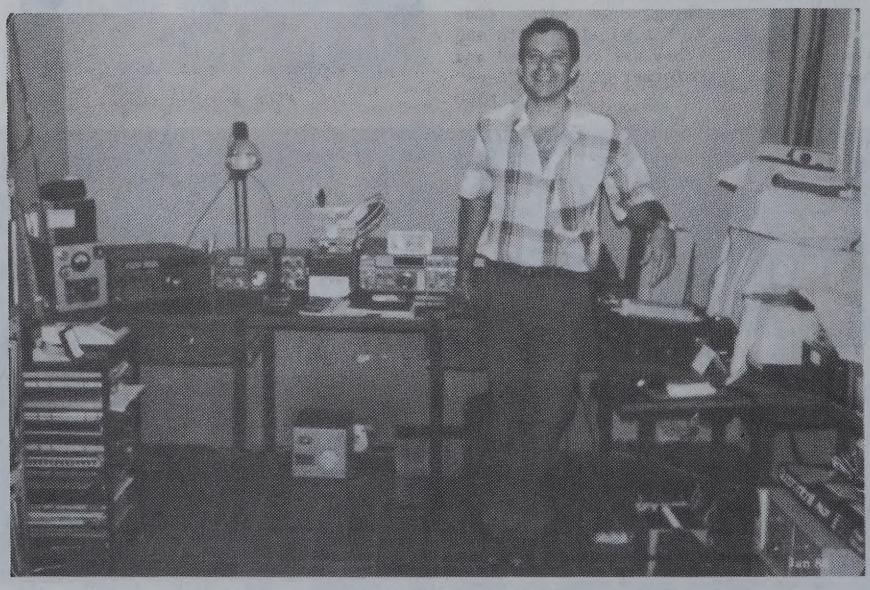
Kele, YU1AO, ex YU1KPC, wrote about their antenna problems. The W1CF 40 m antenna and the 15 m KLM monobander were damaged just before the CQ WW DX contest. Now both club stations, YU1EXY and YU1AAO, are trying to repair the damage and get back on the air. Their first effort was the YU1AAO operation in the CQ 160 m SSB contest in the multi operator category. They used a 45 m high vertical local medium wave commercial broadcast station tower with 120 copper band radials. Also, they are planning to build a new antenna system for low bands and stacked beams for high bands.

Victor, UZ0AXX, sent some more information about stations that are active from zones 18 and 19 on 160 m: UA0AG and UA9MR operate CW around 1835 - 1850 kHz, zone 19 is active with UA0UCJ, UA0UAO, UA0QBC, who are on CW and SSB. Igor, ex UA9CDC has activated UZ0BWX club station and has skeds with UZ9CWW on 14125 kHz at 0600 and 1000Z. UZ0AXX operators are working on a full size W1CF vertical array which should be ready by the end of September.

Thanks to Hank, W4PZV, for sending the updates on the activities of their 160 m group and DXCC totals. This rewrote the North American DXCC standings. Hank's son Mark, WA4SVO, is using a 42 ft. vertical and 100 W. We worked during the CQ 160 m SSB test and his DXCC is 88/48.



Pierre, HB9AMO's 27 m tall vertical



Elisio Elvio, PT7BZ

CONTESTING

The last contest we operated was the CQ WPX SSB. The activity was lower than last fall's CQ WW or CQ 160 m SSB as far as 160 m band goes. There were not that many countries active, but those looking for prefixes on 160 had fun inspite of lower activity and poor conditions. Unfortunately, I missed the last 8 hours of the contest. The best contacts here were VK6HD, PT7BZ and a number of Ws. The openings were short but right on time. My 160 m score in the WPX SSB contest was about 655 QSOs, 136 prefixes and about 196,000 points. Like everyone else, I hope to do better next year.

EA8AFS's last year's score was an inspiration for 5B4LP who was trying to corner the single operator 160 m record. The newly erected inverted Vee and the FL2100 amplifier helped on transmit, but he did have problems on receive. 5B4LP regrets that he did not learn some Russian words that would have allowed him to work a few extra stations from the Soviet Union. His effort should result in the Asian record which brings it to the top six world wide.

Angelo, SV1PL, has provided many with a new prefix on 160 using the J41PL callsign. He also worked VK6HD.

The difference in the frequency allocation for various countries still poses a problem and a handicap for some contesters.

There is also a problem with the ARRL band plan for 160. Most of the European countries are allowed to operate between 1810 and 1850 kHz. The DL stations can operate only between 1832 and 1835 on SSB. Using the portion above 1840 for SSB in the US will cause quite a problem for Europeans trying to work US. We usually keep 1830 - 1835 open for our DL friends. This leaves us the SSB band above 1838. But, there are many USSR stations operating CW between 1840 -

Serge Nesterov, RB5MP operating at UK6LEZ (now UZ6LZB)

1860 and above 1860 on SSB, working each other with loud signals. It is hard to hear a UA6, never mind the W1.

Therefore, my proposal is that we use the portion between 1810 and 1825 for our SSB contacts when in a contest or when working a DX. Most of the DX activity on 160 is on CW but, lets try to find room for everyone there. These frequencies are usually quiet in Europe, so lets see what you hear and think about on the other side of the pond.

ZONES COMPETITION

There is quite a competition heating up for working all zones on 160 m. Please let us know what your totals are and include them with your DXCC listings. The present score as we know it, is as follows: (WKD/CFMD)

1. K5UR 35/?
2. DJ8WL 32/32
3. LZ2CJ 32/30
4. N7CKD 30/?

160 m DXCC N. America

1.	W8LRL	198/202
2.	N4PN	181/184
3.	W4DR	171/174
4.	AA1K	169/179
5.	N4WW	159/173
6.	K1MM	156/162
7.	K8MFO	146/153
8.	W1JZ	140/148
9.	W4PZV	138/139
10.	WA2SPL	136/144

PROFILES

Elisio Elvio, PT7BZ

Elisio is probably the most active station from Brazil on 160. Eli is using a TS-930S, a TL922A amplifier and a full size dipole. His main projects now are to complete the 160 m DXCC and 5BWAZ awards. He has 82 countries confirmed on 160 and needs zones 26 and 34 on 80 m. Eli is active on all bands and he would be glad to arrange some skeds for 160. His address is: PO Box 2875, 60 000 Fortaleza Ceara, Brasil, S.A.

Pierre Petry, HB9AMO

Pierre is one of most active DXers on top band in Europe. I suppose that many of you are grateful for the contacts and QSL cards from him. He is on the band almost daily putting out a super signal on 160. Pierre is an avid CW contester and has made a number of outstanding scores on CW in the last few years.

He holds a 160 m DXCC (148/142), DXCC, 5BWAZ and few other awards. His antenna is a 27 m tall vertical with 40 radials. He checks in every Saturday, 1400Z, into the 160 m net with 4X4NJ (14337 kHz). The QSL address is: PO Box 30, 1252 Meinier, Switzerland.

Serge Nesterov, RB5MP

(ex UB5MGZ) is new to 160 but he had a lot of experience as an operator of the UZ6LZB (ex UK6LEZ) club station. He has finished building a UW3DI type transceiver and installed the 160 m inverted Vee on the roof. Serge usually operates in the SSB portion of the band, but he is always ready to jump down to work some CW DX. RB5MP is quite busy now, graduating from the university, but he hopes to be active this coming season.

ACTIVITY INFORMATION

ZS5LB	0319z	1831 kHz
ZF1EJ	0520	1841 SSB
HK4EB	0530	1841
WP4L	0530	1841
VQ9QA	0030	1837
VP2VI	0505	1832
KP2J	0020	
C21NI	1130	1806
ZP5XDW	0327	1836
VK9NS	1058	1827
KX6DS	1020	1826
KG6DX	1122	1826
CO7RG	0325	1846
ZK3RR	1102	1830
JH1ZFH/JD1	1205	1909
JI3ERV/T32	1107	1824

Announcing

THE RADIOAMATEUR's

DX WORLD GUIDE

by Franz Langner, DJ9ZB

325 pages, 18x 25.5 cm will be available in 6 to 8 weeks from *RADIOSPORTING* or direct from DJ9ZB
Franz Langner
Carl Kistner Str.19
D-7800 Freiburg, West Germany

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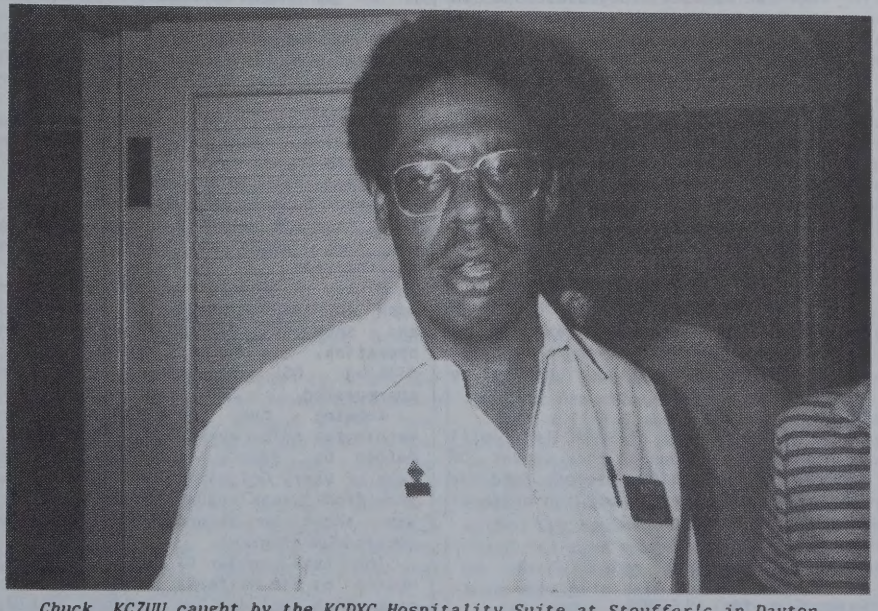

Chuck, KC7UU caught by the KCDXC Hospitality Suite at Stouffer's in Dayton. KC7UU operated from many rare place, he is the one of world's best CW operators.

CLUB LIFE

Tom Rosebush, VE3KZE

SPARC ISSUES CHALLENGE

The South Pickering ARC, upon learning of the unfortunate decision in the Jack Ravenscroft civil action, have responded with a $500 cash donation to the JRSD Fund and have issued a challenge to other clubs to match or better this amount.

The following is a copy of the challenge letter calling upon the two Canadian Amateur Radio organizations to work for the betterment of all Amateurs by providing Jack with the support necessary to appeal the adverse ruling:

Pickering, Ontario,
April 1986.

Canadian Amateur Radio Federation;
Canadian Radio Relay League;

Gentleman:

I am writing this letter on behalf of the membership of the South Pickering Amateur Radio Club Inc..

We have just heard of the unfortunate decision in the Jack Ravenscroft civil action. At the time of this writing we have been informed of Jack's intentions to appeal this decision to the Supreme Court.

This verdict is one that the Amateur Radio Community can not allow to stand. The potential ramifications are such that any Federally Licensed transmitting station whether in the Amateur Service or not could be shut down on the slightest pretext.

We understand the position that CARF and CRRL have taken during the proceedings against Jack. It is now time for our two national organizations to put aside their differences and fight for the preservation of our hobby, before it is to late.

Jack can not be expected to foot the expense of the appeal or judgment if it were allowed to stand. We must give him our total support, legal, financial and moral. What ever funds your respective organizations have, should be directed toward this appeal. Their intended use will become irrelevant if this decision is allowed to stand.

If all licensed Amateurs could be challenged to donate $5.00 we would be well on our way to preserving the hobby and the Federally Licensed right that we have enjoyed to date.

We the membership of SPARC Inc. will be sending a cheque in the amount of $500.00 to the Jack Ravenscroft fund. We challenge all other clubs, to match or better this donation.

73's

Peter Schuyffel, VE3JPP,
President SPARC Inc.."

VE3SR FUND DONATIONS AT 1986 HAMVENTION

The following amateurs have donated to Jack Ravenscroft RF Susceptibility Fund at Dayton Hamvention *RADIOSPORTING* booth:

W8LBI	$ 20
W3CV	10
K4PB	20
W9YFI	1
NI8G	10
WF5E	5
WØRLY	5
KD8SF	10
KA2AJT	5
K8TCR	1
KI8B	1
KQ8O	1
K5UC	2
???	5

A total of US$ 96 was collected and sent to VE3SR Fund in Ottawa. Thanks to all of you who helped! (VE3BMV)

VISALIA CONVENTION

(From the So. Calif. DX Club Bulletin.)

The 37th annual International DX Convention is now history. So was the turn out, according to Don Bostrom, N6IC. A crowd of 533 DXers, including 14 out of the country and 30 out-of-state attended the three day affair.

Hospitality suites form Kenwood and Yaesu were present during the weekend - lot's of knobs to spin and factory reps to talk to. Plenty of goodies from Kenwood were passed out.

Day-long events included the DX Contest Forum with Dick Norton, N6AA, Jim Neiger, N6TJ, and Marty Woll, N6VI, representing the Contest Advisory Committee. Discussions on the CQ contest and slides of the really big guns were shown. Awards were presented to winners of past CQ contests by Hugh Allen, W6MFC. Jim Stephenson, KM6B took the single op. 40 m 1985 ARRL contest.

The DX FORUM concluded with the CW copying test. One hundred countries were given in what sounded like 100 WPM with Maximum QRM. The winner, with over 30 call signs, was W6YA, who won a Bencher paddle.

Sunspot cycle DX forecasting and propagation experiments from the Antarctic was the next program. Conditions have to get better!

Terry Dubson, W6MKB, amazed those that have not seen his antenna farm in the sky with his famous slide presentation.

Mickey Gillerstein, CE3ESS, was on hand to pass out cards, collect cards and show his slides of the CEOAA operation. His humor and hard work at filling QSL requests was much appreciated.

Knowing the right people in Washington helps even with a DXpedition. Taiwan DX, BVOBG, came about with the help of Barry Goldwater, K7UGA. A slide show from Taiwan by Dave Siddall, K3ZJ, was shown on Saturday during the continuous programs.

The ever popular DX Forum was next, hosted by Jim Rafferty, N6RJ, with a cast that included Don Search, W3AZD, Ellen White, W1YL/4, Chod Harris, VP2ML plus many more. The debates continued about Aruba, Pribilof Island and some I can't even pronounce. Good news out of the ARRL DX desk. Don Search has reduced the backlog of applications to less than three weeks.

The pool side afternoon cocktail party began on schedule, presented by Ted Henry, W6UOU. Thanks to bartenders Frank, Dan, John, and Tom.

Special awards and presentations were given out during the evening banquet. The Clipperton award went to WB6EXC. Congratulations go to Tex, N6AHV, for being named DXer of the year. Ray Harper, N6DKP, was the first winner of the W6AM Memorial Award.

KH6IJ, Katashi Nose, received a Special Achievement Award. This was presented by both NCDXC and SCDXC. Nose was also made an Honorary member of both clubs. A well deserved standing ovation followed this award.

The featured banquet speaker, Julio Cruz, D44BC, showed us what DXing from Cape Verdes is like. Jim Neiger helped out. I am ready to go just for the lobsters.

Many members took home prizes following the banquet. The big winner was Larry Miller, W7CB. His new TS940S should make retirement that much easier. Other winners for the weekend included: KG6PV, Phil Rodowsky, a Bencher paddle; N6CQG, Mel Neft, Dr. DX; W6YLJ, Chuck Imsande. Icom IC-751: W6CN, Robert Cobb, 75m Rotatable Dipole: WA6NLJ, Paul Mezzapelle, 3CX800 tube: and N6IC, Don Bostrom, Tempo S-15. Fred Laun, K3ZO won the grand prize of the Henry 2K Classic. There were other winners, and I am sorry if I didn't get your names.

Sunday breakfast was a trip through Africa with Lloyd and Iris Colvin, W6KG and W6QL. They always make it look so easy. Six months and seven countries in Africa on their Yasme DXpedition.

That concluded the Visalia DX convention. A success for SCDXC. The Northern Club announced that the first weekend in April, 1987, they will again host the convention from the Visalia Holiday Inn.

Once again, please send advance notice of your Club or Association events for inclusion here in the Club Life page to: VE3KZE, 733 Annland Street, Pickering, Ontario, Canada. L1W 1B5.

73 for now and remember to support your local Club. Yes, you will be missed if you stay away!

Tom Rosebush, VE3KZE.

NEW CLUB

The Westside Amateur Radio Club, new to the Westside of Los Angeles, meets the third Thursday of each month. This new general interest radio club welcomes all Amateurs. Meetings are held at the Red Cross building at 1450 11th St., Santa Monica. Contact Don, NK6A, or Rob, WK6Y, 213-475-0383, for more information.

SEDXC PLANNING ASSAULT ON CQ-WW CLUB COMPETITION RECORD

The Southeastern DX Club, W4NT, of Atlanta GA plan on sending several DX-

peditions out for the CQ-WW contest next fall. The plan is for between 4 and 6 groups to operate during the contest, primarily from Caribbean locations. There is some possibility of a Pacific group also.

HAMFESTS ANNOUNCEMENTS

The Baltimore Radio Amateur Television Society presents:

The FAMOUS BRATS MARYLAND HAMFEST AND COMPUTERFEST to be held on Sunday, July 27th at the Howard County Fairgrounds, Route 144 at Route 32, adjacent to Interstate 70 in West Friendship, Maryland. Advanced reservations a must for vendors, since no tables will be sold on the day of the hamfest. There will be free VE Exams at 11:00 AM on Sunday, with no advanced registration required. Talk in on 63/03, 16/76 and 52.

For further information and reservations, write to W3GXK, BRATS, PO Box 5915, Baltimore, MD. 21208.

NIAGARA FRONTIER INTERNATIONAL
HAM-O-RAMA
HAMFEST AND COMPUTER SHOW

The Niagara Falls Convention Center, located on Fourth St. between Rainbow Blvd. and Niagara St. in downtown Niagara Falls, NY will be the site for this yearly event. The date is Sept. 6, 1986 and the show will be open from 7:00 A.M. to 5:00 P.M.

Talk in on W2EUP/R, 146.31/.91 and 146.52.

Canadian Registration can be purchased in advance for $4.00 U.S. until August 20 via mail to Ron Hawkes, VE3DNB, 91 Manning Ave., Hamilton, Ont. L9A 3E8 (SASE please) or after August 20 for $5.00 U.S. from Ham-O-Rama 86, P.O. Box 1107, Princess St. Post Office Fort Erie, Ont. L2A 5N9.

For further information contact Nelson Oldfield, WA2ZSJ at 126 Greenway Blvd., Cheektowaga, NY 14225 telephone 634-6394 after 6 P.M.

CONVENTIONS

The Western Washington DX Club will host the 34th Annual Pacific Northwest DX Convention, July 25-27, at the Sheraton Hotel in Renton, Washington. A variety of programs and activities for the DXer and contester are scheduled, including special presentations, films, a contest panel, slide presentations and a tour of ICOM America, Inc.'s corporate headquarters.

Bob Winters, KD7P, portable KH4, who recently returned from his Wake Island operation, will be one of the featured guest speakers. Also, look forward to special prize drawings and social events.

Pre-registration tickets purchased before July 1, 1986, for all activities including the Saturday banquet and Sunday breakfast are only $38.00 per person (at the door, $42.50); for programs and the banquet, $33.00; and programs only, $13.00.

For further information, contact Andrew Isar, NN7L, Convention Chairman, (206) 467-1277 PO Box 224, Mercer Island, WA 98040.

THE 1986
DAYTON HAMVENTION

Neither a small electrical fire at a booth on Saturday nor a shorted electrical service transformer that knocked out power to part of the Hara Arena on Sunday dampened the spirits of an estimated 28,000 attending the 1986 Dayton Hamvention the weekend of April 25 - 27.

Unseasonably warm weather, low cost air transportation and a healthy interest in all aspects of amateur radio contributed to the record turnout which became evident as soon as the doors to the exhibit areas were opened at noon Friday.

A number of long - time exhibitors at Dayton told Westlink Report that they had never seen as large, interested and buying a crowd descend on them so early on at the convention. Many report that the flow continued this way all three days.

A few pieces of gear deserve special mention. Yaesu Electronics Corporation took center spotlight with its introduction of the world's first all mode HF/VHF/UHF transceiver. Designated the FT 767EX, the new radio will operate from 1.8 through 450 MHz! VHF/UHF operation does require the installation of modules into the basic rig, but fully configured, the FT-767EX provides single radio frequency coverage on a level never before offered to amateur radio operator.

Also of note was the interest in gear for both 220 and 450 MHz - both FM and all mode. By late Sunday, it was almost impossible to find any unsold new 450 MHz handhelds. Packet gear was also selling well, making this year of major growth in ham digital communications.

Numerous forums and technical sessions also drew larger than usual crowds, and the vastly improved facilities at the Hara Arena and the choices of topics kept the amount of "wandering" in and out of sessions to a minimum. The expanded forum schedule made it difficult for a few speakers, who found themselves scheduled in two sessions at the same time.

Speakers included such well known amateurs as Vern Riportella, WA2LQQ and Jan King, (W3GEY) of AMSAT; The ARRL's Don Search, W3AZD; DXers Jim, VK9NS and Kristi, VK9NL Smith, Lloyd, W6KG and Iris, W6QL Colvin and others, Ham of the Year Roy Neal, K6DUE; television and film producer Dave Bell, W6AQ; "E.T. Communicator" Henry Feinberg, K2SSQ and others discussing the media and "one on one" interaction to build interest in amateur radio; a legal forum with attorneys Jim O'Connell, W9WU, Christopher Imlay, N3AKD and Dale Clift, NA1L; and 73 Magazine's Wayne Green, W2NSD.

The FCC, represented by Special Services Division Chief Raymond Kowalski and Private Radio Branch Chief John Johnston, W3BE, brought late word on the "slow code" NPRM release and the Commission's decisions on repeater coordination. The FCC not only ran its own seminar session on Sunday, it also took and active part in the second annual North American Frequency Coordinators meeting.

Congratulations to Forum Chairman John Camp, WB8UED, on putting it all together. Another person deserving special mention is Prize Chairman Jan Kaywood, WD8CUA, who gave away in excess of $56,000 in prizes! -- a new record.

While the Dayton Hamvention is known for its many surprises, this year the biggest of these occurred at the Awards Banquet. Not to take away any glory from either Technical Excellence Award winner Doug DeMaw, W1FB, or Special Achievement Award winner Rev. Michael Mullen, C.M., WB2GCQ, most agree that this was Roy Neal's, K6DUE's evening. Roy was chosen by DARA as its 1986 Radio Amateur of the Year. Roy Accompanied by his wife Pat, came to Dayton to accept the honor, but the evening is one we predict K6DUE will never forget.

In addition to receiving the coveted "Radio Amateur of the Year" plaque, Lou McFadden, W6DID, one of the original members of the SAREX team, represented the Johnson Space Center Amateur Radio Club to present Roy with a personal "thank you" from ham astronauts Owen Garriott, W5LFL, and Tony England, WOORE.

In his short but eloquent remarks, McFadden crystalized what others have implied: "It is safe to say that without Toy Neal, there would be no Ham in Space program."

But the surprises did not end there. Shortly after completing his remarks and receiving a standing ovation, Roy was recalled to the podium to introduce another of his many friends. Ironically, this person had been mentioned in Roy's speech: US Senator and former astronaut John Glenn. Glenn said that he could not leave the Dayton area without sharing in the evening with his long time friend. The appearance by Senator Glenn was unexpected, and appeared to bring a tear to K6DUE. It was evening that those who shared in it will not forget.

(Westlink Report)

Steve Affens, K3SA awarded.

The Potomac Valley Radio Club member Steve Affens, K3SA, has been named Cameraman of the Year by the White House News Photographers Association. Steve, who has been with WJLA-TV (channel 7) for 18 years, earned a total of six awards. Steve and the other first place winners met with President Reagan in the Oval Office on March 6th.

PVRC and *RADIOSPORTING* add their congratulations to the many others already received by Steve for this highly prestigious honor. The award winning news pieces will be shown at the Library of Congress opening May 31 and running through November 1986. (PVRC)

RADIOSPORTING REWARD

RADIOSPORTING is sponsoring its subscription drive. The reward is extension of subscription by one issue for each new subscriber sponsored.

Tell a friend about RADIOSPORTING and encourage him to subscribe. If he does so, he should mention your call sign on his subscription application: "Sponsor: W1ABC." RADIOSPORTING will automatically extend the sponsor's subscription by one issue for each new sponsored subscriber. No special forms required, just make sure sponsor's call is mentioned.

YOU DON'T HAVE TO BE A DXER OR CONTESTER TO ENJOY RADIOSPORTING!

CONTESTING on VHF and above

John Kitchens, NS6X

PO BOX 939, Camarillo, CA, 93010, USA

de VE3BMV:

We welcome our readers to our new VHF/UHF column. We will provide fresh and timely coverage of activity many of you are involved in, using those small antennas and a "very short waves." We will cover the operating and technical aspects of VHF/UHF activity. John Kitchens has kindly agreed to lead the column and we will be gradually adding more contributors from other geographical areas in order to give you a comprehensive coverage.

Please spread the news about our magazine amongst the VHF contesters and "regular" VHF enthusists alike. RADIOSPORTING *will give you the oportunity to publicize your activity with shortest lead time available of any other monthly magazines.*

Introducing John, NS6X:

John was first licensed in the fall of 1966 as WN6UYJ, a 12 year old junior high school electric shop student. Don Ulrey, WA6TRX, was the teacher. He gave an automatic "A" to anyone who went into the radio room. John's uncle, John Valero, (not sure of his call, but he is in southern Florida) was a ham, so he had a little exposure to radio.

The automatic "A" sounded good, but the radio room in itself offered intrigue and excitement. On Monday, Mr. Ulrey gave a students a Morse code sheet, and said to be ready for a test on Friday. John didn't know it was supposed to be hard, so the four of them who decided the radio room was going to be their electric shop, passed the test on Friday.

Working on speed for an hour each day, with little else to do except learn the theory, they were ready for the test in three weeks. When the license came, John helped to put WA6VUA, the club call at Robert E. Peary Junior High School in Gardena, CA, on the air.

Since then, he has worked as KZ5JS in the Panama Canal Zone during a tour of duty with the Air Force. Three years ago he upgraded to the Extra class and got callsign - NS6X.

Joh works for the Los Angeles City Fire Department where he was recently promoted to Fire Inspector. The LAFD is looking into hams for communications assistance.

John's wife, Suzie, has put up with him for 13 years. They are proud parents of two girls, Katina, 9 years and Alyssa, 1 year old.

NS6X has worked with the Ventura County Amateur Radio Club, K6MEP, in HF and VHF contests, the Southern California Contest Club and has been going single-op hilltopping for VHF contests during the past year.

John's educational background has been quite varied, but primarily in Fire Sciences and Journalism. He has worked as a staff and freelance writer/photographer for several newspapers and magazines. Wayne Overbeck, N6NB, introduced him to word processing when he was one of his journalism instructors.

VHF CONTESTING

Activity on the higher frequencies has been rapidly increasing in the United States during the past few years. With advances in commercial gear, activity will continue to grow. US amateurs have heard about the intense competition and high levels of activity in Europe. Now there is a place to report all of this activity.

This column will attempt to be a forum for the exchange of VHF-and-up contesting information, ideas, complaints, technology, expeditions, and whatever else you want it to be. To be effective, and a representation of VHF-and-up activity throughout the world, an international network of reporters is being sought.

The quality of writing is not important. The language is not important. English, Japanese, German, Russian, Spanish, French can all be translated, if necessary. Even the quantity of writing is not significant. Let me know what is happening, preferably at least two months before the event occurs.

If not, let me know what happened. Writing scares some people. If you are one of them, jot down a note on a QSL card and mail it to me. I can follow-up your information.

In the US, there are four major VHF-and-up contests, with single band, four-hour sprints in the spring. Only the CQ VHF WPX Contest recognizes portable operation as a separate category.

Grid-expeditioners, mountaintoppers and other portable operators spend a lot of time, effort, and money putting a signal on the air to give other operators a new grid square.

The typical scenario goes like this:

You carried your equipment up to the top of the mountain, which meant making six trips, one-half mile each, one way, because the road to the top was completely washed out by the rain the night before. Your car, where you were going to sleep, can't be carried over the washed-out road. That means that the tent you just happened to bring along is put into service as the operating location and sleeping quarters.

One more trip to bring up the power source, striping the car of its battery. Be glad this time that there was no need for a generator, all power being 12 volt. The station is set up, three hours after the contest starts. A few QSOs into the operation, the rain returns. Without a floor cloth in the tent, the rain soaks through the floor and soaks the sleeping bag. The rig stays dry.

The plans begin for the next contest, after you work all those hearty souls who are warm and dry in their homes. A few other friends, on other mountaintops or good multiplier grids, have been worked, greetings and expletives were exchanged about the weather, but the contest is fun.

Months pass, another contest, and finally the results from the prior contest appear in the magazine. There you are, a good showing, but not as good as it could have been. There's Joe, who sat in his warm and dry home, with his permanent antennas and fixed radios. He beat you by one multiplier - yours. If you hadn't given him that QSO, with your multiplier, well....

Recognition will be coming for the portable operator. In any recognized contest, mountaintoppers, gridexpeditioners, or other

portable operators may send their standard contest results to me. The rules of the contest will apply, with only one addition. You must give me comments, even if only one incomplete sentence.

The results will be given in this column, with special certificates issued to the winners in each area as identified in the contest rules. This is not limited to North American contests, but to any operation, in any recognized contest, anywhere in the world.

RADIOSPORTING and the IRSA would like to sponsor annual international VHF-and-up contests. How many contests, when they should be held, and the rules, are open for discussion. The scoring rules of the ARRL contests recently changed from sections to the four digit grid squares as multipliers. There is some talk among contesters that the full six digit grid square locator should be given in the exchange, and used as the multiplier.

No rule changes will help the population density disparity as found in the difference between the east and west coasts of the US. In the west, if a station can make 200 two meter QSOs, including FM, during a contest weekend, the operator has done well. That would be a poor showing for a top station in the east.

Amateur Mountaintopper has organized an outstanding operation, first-rate equipment, found a Gunnplexer to use for 10 GHz, and will be on for the entire weekend operating out of his contesting camper. He arrives at the site after driving for 11 hours, the last two over the two mile dirt road leading to the mountaintop.

Amateur Mountaintopper sets up the rigs, the antennas, the generator, sets the time on the clock and tries to make the first QSO. The condors circling overhead come in for a closer look, finding that the mass (mess?) below is just right for a new roost.

The QSOs are coming slow, considering that this grid square hasn't been on the air, on any band, for two years. Amateur Mountaintopper puts out a good signal on all bands, but has trouble finding the number of QSOs he needs for a winning effort. He can't find anyone to work on 10 Ghz.

Publicity, Amateur Mountaintopper thinks. Maybe I should have told someone that I was coming up here. Publicity is critical to a successful operation, especially to one in such a low population density area as in western North America. (Beams are sharp, it helps to know where to look for rare ones.)

FM contacts are critical for a winning operation. In the west, finding operators willing to give a point during the contest on a simplex FM frequency, is difficult, at best. Publicizing your operation well in advance is important to assure that those casual operators are there to give those important points.

To begin the publicity campaign, you first must decide what you are going to operate, and where it will be. That means frequencies, times, and location.

Casual conversations with fellow operators is a good beginning. Club meeting is another good source to bring up the operation. Club newsletters are almost all hurting for information to fill the pages.

Devise an operating schedule, one where you will solicit contacts at a given time on a given frequency. Have this published in your club newsletter. Supply this information to regional newsletters for publication. On the West coast, we have the "West Coast VHFer", published by WA6IJZ, Bob Cerasuolo. It is a good reference publication for what's happening in western North America.

During organized nets on local repeaters, if allowed, make announcements of your operation plans. Solicit contacts before the contest. If you plan on using something such as 2.3, 10 or even 1.2 GHz, find someone else who will be operating on these frequencies. If you have to, supply a rig to another operation. It gets activity on the air.

Publishing operation information in major magazines must be done months in advance. To allow for the lay-out of the magazine, articles must be in several months before the actual publication date of the magazine. "Radiosporting" is better than most magazines. Material received by the end of the month should be in your hands in about three weeks.

Call recognition is important. The more your call is heard, the easier it will be for people to work it. People will be more willing to work a familiar call on FM simplex than they will a stranger's request for a contest QSO. I don't know what psychological pattern that suggests, but it seems to hold true.

Amateur Mountaintopper publicized his next effort. He wrote about his proposed exploits in the newsletters of the Southern and Northern California Contest and DX Clubs. When he went to FM simplex to solicit calls, there were over two hundred members waiting for him. Not only did he find this on 2, but 220 and 440 were the same. His totals were over 500 QSOs for this operation, including a 10 GHz QSO with a multi-op group on a nearby hilltop. He loaned them a second Gunnplexer he had, coordinating the operation on 2.

When he turned on his radios, there were people calling him, following his published schedule. He set a new single op record.

Your proposed operations will be included in this column, if enough advance notice is given. Also, publicity will be given to VHF-and-up activities, whether involving contesting or not. While this column will be devoted to VHF-and-up contesting, increasing activity on the bands will be given equivalent priority.

"Radiosporting" has been primarily an HFers contest magazine so far. We are now moving into different areas. Comments are appreciated, welcomed, and wanted. VHF products can be reviewed here, either by sending the product to me, or by sending your comments concerning the product, whether good or bad.

Another place to publicize yourself, learn a lot, and have a good time is at conferences. The West Coast VHF/UHF Conference was held May 2,3, and 4 at Griswold's Hotel in Fullerton, CA. That's just a few minutes away from Knott's Berry Farm, Disneyland, and Ham Radio Outlet. Plan your attendance for the next event and enjoy the experience.

April's CQ has the rules for the VHF WPX contest starting July 19. April has seen the ARRL sprints, with the June VHF QSO Party coming the first weekend in June. For the sprints and QSO Party, be sure to send your portable operation log info to me.

We are also looking for reports of unusual propagation openings, aurora activity, etc.

By the time this is printed, I should be on the "Viewtron" BBS system. That's if the modem decides to work.

Until next month, John Kitchens, NS6X

DOING A DX CONTEST AS A "LITTLE GUN"

Dave Pruett, K8CC

Many "little gun" stations and operators avoid making serious effort in the DX Contests. They may "fool around" and make a few hundred QSOs to do their bit for the club. However, these "fool around" efforts don't really cause the contester to learn or improve. What the little gun needs to do is make a serious effort using all the resources at his command.

Now, we must be realistic about this, because a tribander and wires in W8 is not the stuff a top ten finish is made of. With this in mind, what the little gun needs is a goal. In a way, he is in a very flexible position, because he can make the contest what he wants it to be. The K3LRs and N4ARs of this world are doomed to strive for the spots in the top ten - the little gun's goal can be whatever he wants to shoot for with his available arsenal.

As an example, in the 1985 ARRL CW DX Contest I operated from the "real" K8CC QTH, with a 50' high tribander, 40' high 80/40 dipoles and no antenna on 160. I began quite casually, not getting on until 0043Z Friday night and sleeping through the first two hours of European opening Saturday morning. Saturday evening I took off two hours to run a pizza and watch some prime time TV. I got six hours of sleep Saturday night and went to church Sunday morning rather than run Europe. (Some things are more important than a casual effort.)

What did I accomplish and what did I learn form this casual effort? I wound up with 556 QSOs and 204 multipliers for 340K points in 22 hours of operating time. I worked a few new countries and learned some new things about DX propagation. I discovered that even a tribander can sometimes run stations from W8 on 20 m. I realized that in the afternoon low sunspot doldrums when the only things to work are KP4s and PYs the size of your antenna doesn't really matter at all.

From this, I realized the essential secret of doing a DX contest single operator: there is so much to do, don't sweat the small stuff. This may seem a simplistic statement, but it isn't really. In a multi-operator effort, particularly in CQ WW, you have to be everywhere at once including the marginal openings. As a single operator, all you have to do is identify the best thing that your station could be doing at any given moment. So, go do it!

Let's talk about planning for a serious little gun effort and you will begin to see what I mean. For starters, what about hardware? I am not going to give a class on station design here, because the spirit of the little gun is to use what he has. A tribander and low band wires is perfectly adequate. A KW is a necessity, but even a SB200 will do just fine. If you have a amplifier with 160, it will be worth the time to put up some sort of wire for that band for extra multipliers. The usual contest aids such as filters, preamps, etc., and good station ergonomics are still important, but don't be afraid to jump in with less than optimum hardware.

The most important thing for a W8 DX contester to remember is to never miss a chance to run Europe. This means 20 and 15 in the mornings, 20 in late afternoon and, during the CW contest, 40 in the late afternoon and early evenings. Also, don't miss the European sunrise around 06Z when it is possible to "search and pounce" Europeans at a good rate on 40, 80, and sometimes 160 if you are a big enough gun.

Along these lines, the cardinal rule for little guns is to act like a big gun whenever possible. Try to recognize when conditions are good enough for the little gun to run Europe, and take advantage of it! But, if the big guns are CQing and you can't, do not give up.

Similarly, the single operator should recognize the best times to catch some sleep, unless he is the rare individual who can stay awake and alert for 48 hours. The best time to sleep is the middle of the night. Try to stay up through the European sunrise (07Z) and get up well before the local sunrise to catch the Pacific and Asia multipliers on the low bands. Another good time to sleep is the middle of the afternoon unless Europe stays open. Even then the single operator can make a diet of working KP4s, LUs and PYs on 20, 15 and sometimes 10. But never sleep through the morning opening to Europe.

By now the modus operandi for the little gun is starting to emerge. Run Europe when you can, and "search and pounce" the rest of the time. If you think about it, this is essentially the same strategy that the big guns must accept during the low sunspots. This becomes very clear when everyone is in the Central and South American pileups in the afternoon. We are all doing the same things at the same times and it is very satisfying to sneak past a big gun to a new multipliers.

Also, the little gun spends less time running so he generates fewer QSOs. Hence, his score depends very heavily on multipliers. An up-to-date all band multiplier checksheet is an absolute must both as an operating aid and as a psychological boost. After the first twelve hours or so, you have a pretty good idea who the serious DX stations are. Working these multipliers on all the open bands provides a challenge and a reminder which helps the score. Working the odd-ball multiplier is fun, but the big multiplier totals are built upon not missing anything easy on all bands.

Lastly, set a goal for yourself. What might be a reasonable goal? With decent operating skills, reasonable conditions, appropriate hardware and maybe 30 hours out of 48, 400 to 500 K is obtainable on either mode in ARRL or CQ CW. DX contests are not as cut and dried as SS, so you can take an occasional break and not hurt your score too badly. But decide to make a serious effort, so that you will come back to the radio after the rest and not just blow it off. I have often said in the past that you had to be crazy to be in a DX contest single-operator all band. Now I realize that you do not have to be crazy, but just learn to make the right moves. (FRC)

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N.O.S.C. Scientist Predicts Sunspot Activity

R. M. Hillyer

Dr. Adolph K. Paul has written a scholarly paper, "Analysis and Prediction of Sunspot Numbers", that appears in the December 1985 issue of *Geophysical Research Letters*. The paper presents both data and a methodology that may affect the scheduling of future shortwave transmissions and manned space activities.

In his paper, Dr. Paul predicts the number of sunspots that will appear annually through the year 2040 (see figure). He does so after employing an iterative procedure that involves, as a first step, a spectrum analysis of the monthly means number of sunspots observed since 1840. Secondly, he extends the data set by using those results for a first order of prediction. After comparing his prediction of sunspot activity with the number of sunspots observed, Dr. Paul revises his formulation to lessen discrepancies between prediction and observation. He repeats the process numerous times, getting, in each instance, a better fit between theory and fact over longer periods of time. He does this until his model satisfactorily accounts for the entire pattern of past sunspot activity. At this point, Dr. Paul uses his model as a predictive tool for the years 1986 through 2040. He realizes, of course, that future observations will necessitate adjustments in his model, but this activity is consonant with the nature of his enterprise, an iterative one.

Dr. Paul's mathematical treatment employs anharmonic frequency analysis, a transform and deals with data that do not consist solely of discrete multiples of a basic unit frequency.

By constructing a methodology that fits past data and promises to make predictions highly accurate, Dr. Paul has provided planners with an effective aid. Knowledge of future solar activity can facilitate effective long-term scheduling of projects requiring either extensive use of shortwave transmission or manned space activity. Intense ultraviolet and X-ray radiation associated with high sunspot activity affects shortwave transmission and may harm people building platforms in space.

Dr. Paul works in the Ocean and Atmospheric Sciences Division of the Marine Sciences and Technology Department. His current research focuses upon ionospheric variability and high frequency propagation.

N.O.S.C. Contact: Naval Ocean Systems Center
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Code 544
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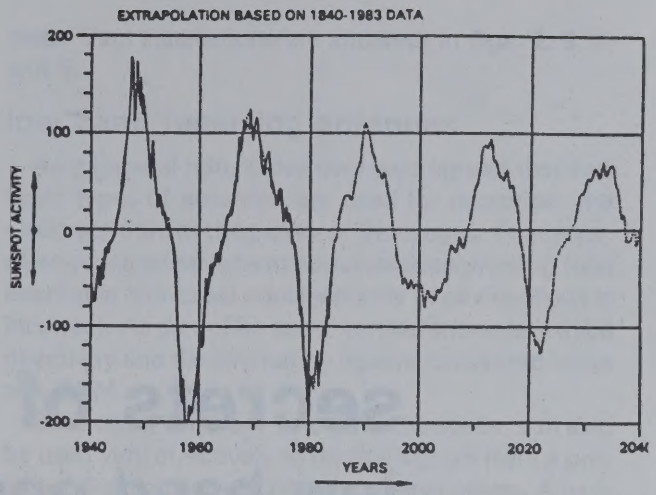

Dr. Paul's model (the graph composed of dashed lines) closely approximates sunspot occurrences (the solid curve) for the years 1940 through 1983. Greatest sunspot activity occurs at highest positive and lowest negative readings on the curve. Positive values indicate one orientation of the sun's magnetic field whereas negative values indicate the other orientation.

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.375	.049	6.37	1.500	.125	68.58
.375	.058	7.34	1.625	.058	36.29
.500	.035	6.48	1.625	.125	74.84
.500	.058	10.26	1.750	.058	39.20
.625	.058	13.07	1.750	.125	81.00
.625	.125	24.95	1.875	.058	42.01
.750	.058	15.98	2.000	.058	44.93
.750	.125	31.21	2.000	.065	50.22
.875	.035	11.77	2.000	.125	93.53
.875	.058	18.40	2.250	.065	56.59
1.000	.058	21.82	2.500	.065	63.18
1.000	.125	43.63	3.000	.065	76.14
1.125	.058	24.73	3.250	.125	155.84
1.125	.125	49.90	3.500	.125	168.37
1.250	.058	27.54	4.000	.065	102.06
1.250	.065	30.78	4.500	.065	115.02

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See what
high-performance stations
do to achieve big-gun status
on 80/160 meters

secrets of successful
low band operation: part 1

I was curious . . . I would often hear stations on the low bands comfortably exchanging signal reports with rare DX contacts and wonder what type of antenna system they were using to achieve such good results. Therein was the beginning of a project that has provided more answers and technical enjoyment than I would ever have imagined possible.

Late last year a three-page survey was composed and sent to 113 of the "big gun" station operators and owners. After reading and digesting a two-inch thick sheaf of replies, many of my questions — as well as many unasked ones — have been answered. It is our pleasure to share this information with you. Much can be learned from the thousands of hours of experience in not only system design but also propagation observations made through the use of these outstanding systems.

A sincere note of thanks is due to the 47 individuals who took the time to fill out the lengthy survey form. Although a considerable amount of information was requested, some respondents not only entered their answers to questions but added more data as well. Responses were received from 21 countries from all continents. A special note of thanks goes to our overseas friends who, besides providing the data, responded in English, which is, for the most part, not their primary language. Responses were received from the following:*

CN2AQ	DJ0IA	DL0WU	EA8ADP	G2PU
G3WMZ	G4AMN	GW4OFQ	I5NPH	JA1FRE
JF1IST	K1MEM	K2FV	K3ZO	K5UR
KG7D	LA7ZO	N1ACH	N4AR	N4RJ
N4SU	NW5K	N6DKP	N7CKD	OE6MBG
OH1RY	OZ8BV	PA3DFU	SM4CAN	SM6EHY
SP3GEM	TI5EWL	VE2HQ	VE3BMV	VE7BS
VK6LK	W1FV	W1NH	WB2ITR	W2JB
W3BGN	W4DR	W6NLZ	W6RJ	YU7PFR
ZL4BO	4X4NJ			

a word on format

Originally, I had considered providing the information in a strictly tabular fashion, following the format of the survey with a list of callsigns and the data in the adjacent columns. But this approach would have required 13.5 printed pages, just for the data! Instead, each category is discussed and tabulated individually, with callsigns provided in some cases.

low band transmitting antennas

Wow! The variety and creativity evident in this area is outstanding and as diversified as the users themselves. One of the reasons people are attracted to the low bands is because it is (or at least was) virgin territory where you cannot simply buy your station and

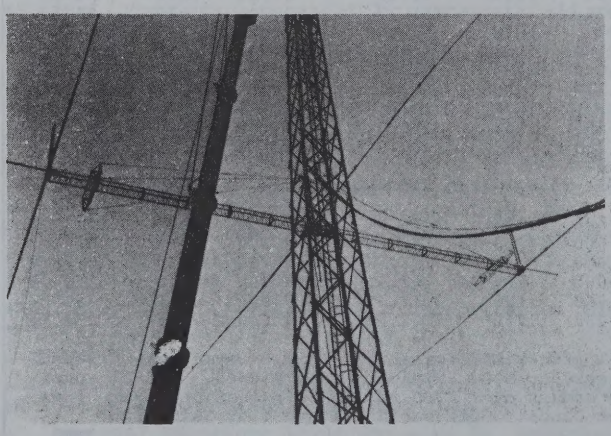

fig. 1. Three full-size element homespun 80-meter Yagi helps produce the outstanding signal heard from I5NPH.

*A note to the others who received a copy of the survey, but whose names do not appear on the list: if you have not yet sent in the form please do so and the information will continue to be compiled. If a form was not sent to you please consider it an oversight on my part and send for it.

By Rich Rosen, K2RR, Editor-in-Chief, *ham radio*

Table 1. 80 meter transmitting antennas

Antenna type	D/P	Additional comments
Yagi, 4 el,tubing	P	Double driven, W6NLZ
Yagi, 3 el,tubing	P	Full size el,OH1RY,I5NPH
Yagi, 3 el,tubing	P	Loaded el, VE2HQ,K3ZO,W6RJ
Yagi, 2 el,tubing	P	40% full size, N6DKP
Yagi, 3 el,wire	P	Wire added one side,YU7PFR
Half loops, 3 el,wire	P	Versatile system, N4SU
Delta Loop, two element	D	240' per loop,DJ0IA
Delta Loop, single element	-	@135',VE3BMV;@20m SP3GEM
Bobtail curtain, phased 2 bay	D	Vt el=238/freq, N4AR
Bobtail curtain, single bay	D	Remote-tuning cap, SM4CAN
Vertical arrays, 4 elements	D	W1NH, W4DR, K2BT, SM6EHY
Vertical arrays, 3 elements	D	0.125 wave, 2 active,W1FV
Vertical arrays, 2 elements	D	HyTowers @ 0.5 wave,W3BGN
Vertical, quarter-wave	-	63' of Rohn 25, NW5K
Inverted Vee	-	@36',70',OE6MBG
Slopers, half-wave, 3 el	P	1 driven, 2 reflect,LA7ZO
Slopers, half-wave, 2 el	P	Fed 70' apart,WB2ITR
Slopers, half-wave, single	-	@80', VK6LK
Slopers, quarter-wave	-	@100',K5UR
Half Square	D	Fed RG58 upper corner,K2FV
Dipoles, phased	D	Phase 0.25 wave both,K2FV
Dipole,tubing	-	94' rotary,@160' N4RJ
Dipole,wire	-	@50',GW4OFQ
W8JK	D	140' el, @ 65',W2JB

Table 2. 160 meter transmitting antennas

Antenna type	D/P	Additional comments
Vertical plus reflector	P	Elec rotatable, 4X4NJ
Vertical, plus parasitic el	D	Cardioid, SM6EHY
Vertical, quarter-wave	-	Grounded monopole,N1ACH
Vertical, quarter-wave	-	Loaded, DL0WU
Half-wave loops, phased	P	Refl/Dir switching,N4SU
Inverted Vee	-	4" open wire @90',W2JB
Inverted L, phased	D	Hytower with 108'H,W3BGN
Inverted L	-	75' Vert,55'H, VE7BS
Slopers,quarter-wave,phased	P	Driven+3 refl,N4RJ
Slopers, quarter-wave	-	3 switched, KG7D
Sloping delta loop	-	Fed 26' fm corner,W3BGN

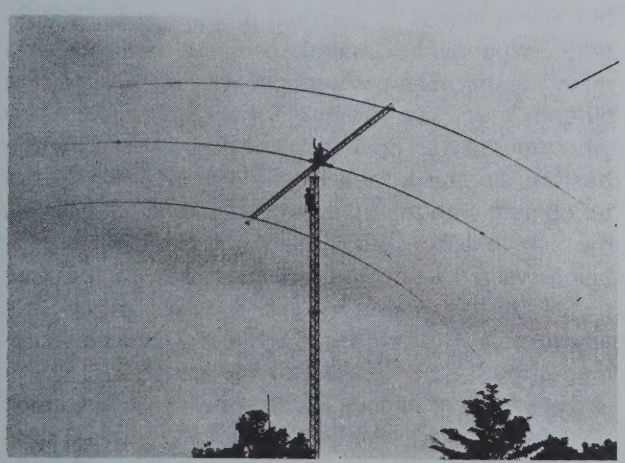

fig. 2. JF1IST uses a commercially available model CY-703 (Create Manufacturing) shortened three-element Yagi.

have someone else erect and install a competitive system. It meant — and still often means — climbing to greater heights, literally, and getting dirt under your fingernails. That's changed to some extent with the availability of commercial Yagis for 80 meters, but the challenge and achievement remain. The full-sized homebrew three-element 80-meter Yagi of I5NPH is seen on its way up (**fig. 1**). There is nothing "amateur" about this installation.

Tables 1 and **2** list the 80- and 160- meter Driven and Parasitic transmitting antennas used by a representative sample of those surveyed.

A few notable examples of some very effective 80-meter Yagi installations are apparent in **figs. 2, 3, 4,** and **5.**

low band receiving antennas

As a general rule, those surveyed agreed that two basic types of antennas are used for reception: the elaborate transmitting array or Beverages. That poor, often-repeated statement about verticals working (and hearing in this case) equally poorly in all directions is incorrect. As part of an array, vertical antennas exhibit directivity and discrimination against unwanted noise and QRM.

Beverages, for those who have the space, can also be used very effectively to receive signals from a preferred direction and discriminate against others. A two-wire version, recently known as an SWA and described by Beverage in his original AIEE paper[1] has the additional ability to rotate an azimuthal null. As with any other antenna, Beverages have their supporters and detractors. That they work is indisputable; that most are installed far from optimally is probably also correct.

Table 3 includes details of Beverages used effectively by the surveyed stations. Lengths, terminations, installation heights, preamp use, and callsigns are provided. Though most Beverages preferably are installed over low conductivity soil, OZ8BV proves that they still perform over salt water with his four unterminated 200-meter long antennas.

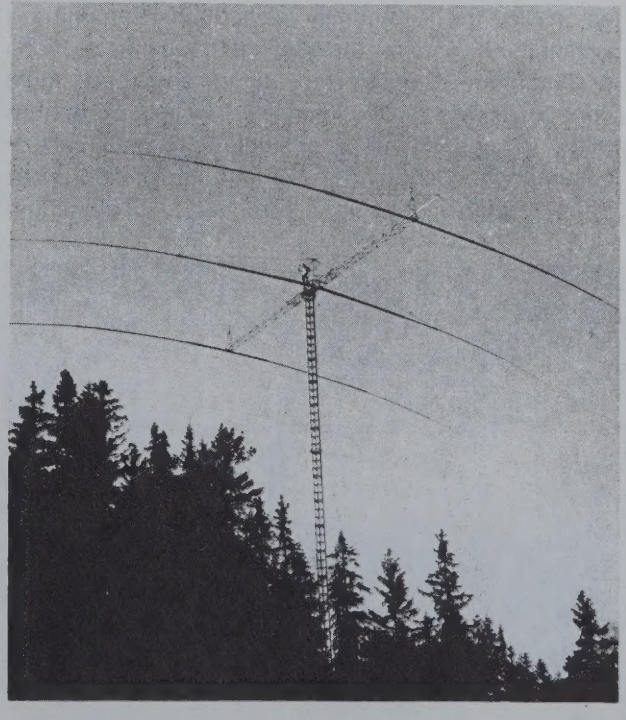

fig. 3. Full size element Yagi is installed "in the clear" and accounts for OH1RY's strong signal from Finland.

Table 3. Low band Beverage receiving antennas

Lengths	Term.	Notes	Callsign
Three @300-600'	Unterm		VE3BMV
Five @540'	450 ohms	20dB preamp	N1ACH
One @800'		10'	4X4NJ
One @390'	440 ohms	8'	VK6LK
One @350'	Bidirect	10',2 #19	VE7BS
Two @750' One @500'			W3BGN
Six @1000			W1NH
Seven @550'	150-1100	3-12'	K5UR
One		2 wire SWA	SM4CAN
Two @700'		2 wire	N4RJ
One @500'		1 wire	N4RJ
One		2 wire SWA	N7CKD
Four @600'		Reversible	N4SU
Three @500'		Fed both ends	W4DR
One @500'	Unterm	6'+preamp	K1MEM
One @950'		8'	K1MEM
One @450'	450 ohms		W1FV
One @550'	Unterm		W1FV

Table 4. Yagi material description

Nr of el.	Element description	Wgt.
3 (K3ZO)	90',linearly loaded (KLM)	400#
3 (OH1RY)	142'(R),135.5'(DR),129.7'(D),5 diff.dia. R-DR=37.7', DR-D=34.45' (Homebrew)	1057#
2 (N6DKP)	El 40% full size, DR-R=24' (Homebrew)	
4 (W6NLZ)	90' el, 76' boom (KLM)	
3 (JF1IST)	96.5' max el,50' boom, (Create CY-703)	264#
3 (VE2HQ)	110' lin loaded el, 11 diff dia,65' boom	515#
2 (JA1FRE)	33' boom (Homebrew)	220#
3 (W6RJ)	(KLM)	

Table 5. VSWR bandwidths for typical 80/160 meter antennas

Antenna	VSWR	Bandwidth (kHz)	
3 el Yagi,shorter el	2:1	100 on CW,100 on SSB	(80)
3 el Yagi,full size	2:1	380	(80)
3 el Yagi,wire	2:1	240	(80)
2 el Yagi,40% full size	2:1	60	(80)
Dipole,rotary (KLM)	2:1	100-120	(80)
Vertical,4 el driven	2:1	>300	(80)
Vertical,2 el driven	2:1	>70	(160)
Vertical,130'shunt fed	2:1	40	(160)
Vertical,quarter-wave	2:1	100	(160)
Vertical,quarter-wave	2:1	375	(80)
Half-wave slopers	2:1	250	(80)
Delta Loop	2:1	75	(160)

antenna materials

This broad category discusses the materials used to assemble the previously described transmitting antennas. In general the Yagis use tapered sections of aluminum, if made from tubing, and copper-clad wire otherwise. The verticals using aluminum (6061-T6) or steel masts, or single or multiple bare or covered wires, show more variety. In addition, most of the rotatable Yagis use a combination of aluminum tubing and insulating sections that are linearly loaded by multiple turns of wire. **Table 4** provides data on the rotaries in terms of length of elements, total weight of antenna and miscellaneous details. All of these are for 80 meter antennas. So far, to my knowledge, no one has an operational 160-meter rotatable Yagi.

fig. 4. VE2HQ's homemade Yagi uses linearly-loaded elements but still is quite large.

hardware

This category encompasses the large rotaries, verticals and wire antennas. Once again the consensus is to use hardware that will last under all weather conditions. For the Yagis, this implies stainless steel or other non-rusting metals; for the wire antennas, good quality rope that is UV-resistant or "Phillystran." To withstand all weather conditions, liberal use of paint, tape, epoxy, Dow plastic sealant, Copper-kote™, or Coax-Seal™ is recommended where applicable. Remember that if the antenna is going to fail, it will most probably fail in the worst weather, during the low-banders' best operating season.

electrical characteristics

The great variety of responses to this question were not only a function of the particular antenna in use but also a matter of personal preference for instantaneous bandwidth operation versus tuning with a matching unit. There were those who wanted only flat 50-ohm lines using coax, and there were quite a few who thought that open wire line and use of a matchbox was a better approach. N4SU summed up the latter opinion with the following statement: "It boggles my mind to think about all the Megawatts of RF energy being wasted in heating coaxial cable on the ham bands in this country." An example of N4SU's approach is shown in **fig. 6** where he uses his multiloop array for 20, 40, 80 and 160 meters.

By my way of thinking, both approaches have their obvious advantages and disadvantages. **Table 5** summarizes some of the achievable VSWR bandwidths correlated with the particular antennas used. This is just a rough guide; VSWR is a function of many parameters.

antenna gain

Another somewhat controversial term is achievable gain. However, unlike the low-banders' higher frequency cousins (with their 10 to 20-meter high-gain arrays), due to the large element dimensions on 80 and 160, the actual variation between lower and higher gain antennas is not too great. After reviewing all the data, the highest gain antenna described, I believe, is the phased Bobtail curtains built by N4AR; he estimated the gain at 7 to 8 dB over a single ground-mounted vertical. The three-element Yagis are not far behind, with those surveyed indicating a range of 5.5 to 6 dB. Next in the gain line are the phased four-

element vertical arrays, coming in at between 4.9 and 6 dB, depending upon whom you talk to.

The textbooks provide, of course, the theoretical maximum values, but there are several important points that should be stressed before getting carried away with these numbers. Though the maximum difference in antenna gain between a *big gun* and a *little pistol* on 80 and 160 is around 6 dB, it is not the most important factor in the success story. The true criterion that makes these high performance stations shine is in their ability to *hear* — and I'm not necessarily talking about the use of Beverages.

A four-square vertical array does not have much more gain than a standard (quarter wave electrically and spatially separated) two-element array. But look at their front to back ratios, i.e., their E and H field patterns). The larger system provides considerably more attenuation off the back over a greater azimuthal beamwidth than does the cardioid version. This translates to receiving better and not disturbing others on adjacent frequencies as much if they're not in the beam direction when you're transmitting. It is for this reason, and the fact that it is difficult to quantify the received survey data (without all the parameters and operating conditions being known) that more specific antenna gains are not listed.

Before we leave this subject, that "measly" 6 dB variation in gain mentioned before can, at times, on the low bands, represent an enormous difference. During marginal conditions, even a 1 dB change in signal level can mean the difference between contact and no contact.

front-to-back ratios

Getting down to basics, what determines a high front-to-back ratio? "Front" is where the signals add and "back" is where they cancel, vectorially speaking. Even simple arrays (two elements) can experience a front-to-back (ratio) in excess of 60 dB! However, this is for very specific signal arrival angles (azimuthal and elevation) and polarization on sky-wave signals in particular. A slight change in one angle is all that is needed to upset the relationship. And changes do occur, sometimes over a very short period of time.

More complex arrays, however, can and are designed to produce azimuthal patterns that exhibit deep nulls (30 dB or more) over a 90-plus degree beamwidth. The four-square and the three-element inline are just two examples. The proponents of these driven arrays are quick to point out that they have two major advantages over rotary Yagis: instant direction change (through switching) and better front-to-back and front-to-side values. However, in fairness to the Yagi constituency, there are "Horizontal" nights and "Vertical" nights, and many a time a high horizontal beam has handily beaten the vertical arrays into Europe on the short path. But let's see, in **table 6**, what F/B's have been observed by the actual users of the low band antennas.

polarization

There are no eye-openers here. Both horizontally and vertically polarized antennas are used effectively by the high-performance stations. Due to the large antenna dimensions at these low frequencies, there are more vertical than horizontal *arrays*. However, as pointed out before, there is no one *best* antenna for all propagation conditions, locations, and times. If there were, it would probably have the following properties: instantaneous switching in azimuth, ele-

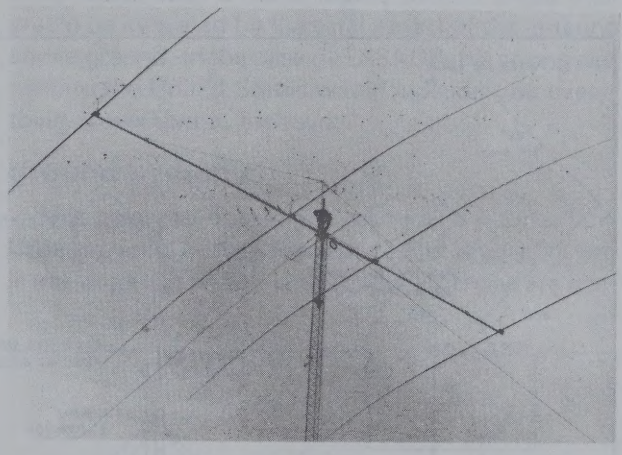

fig. 5. A double-driven element is used in W6NLZ's four-element Yagi, a product of KLM.

Table 6. F/B ratios for low band antennas

Antenna type	F/B (dB)	Comments
2 element Yagi,short el	10-15	JA1FRE
3 element Yagi,short el	10-15	function of freq.
3 element Yagi,full size	30	
3 element Yagi,wire	8-12	YU7PFR design
4 element Vert. phased array	30	W1NH
4 element Vert. phased array	15-45	SM6EHY
2 element Vert. phased array	20-30+	W1FV
Bobtail curtain, two bay	15-20	Great F/S
Delta loop, 2 element driven	20	DJ0IA

Table 7. Rotators

Designation	Comments	# in use
Telrex	#BA32899RIHS (Largest)	3
Homebuilt	1:250 ratio, 0.5 rpm	1
Create RC5A-3X3	Manufactured in Japan	2
Modified prop-pitch	Rotates KLM 4 el Yagi	1

Table 8. Support structures

Description	Height	Station
Building plus tower	180'	EA8ADP
Rohn 45	160'	N4RJ
Rohn 80 plus 10' mast	150'	K3ZO
Self-supporting	131'	JA1FRE
Rohn 45G plus 10' mast	130'	K5UR
Trees	130'	VE7BS
Westover series XHD	120'	LA7ZO
Tri-ex T-20	120'	W6NLZ
Homebuilt 50' on 60' microwave twr	110'	VE2HO
Telrex Big Bertha	110'	VE3BMV
Heights	98'	N4SU
Create KT-11N	98'	JF1IST
Tri-ex Skyneedle	90'	W6RJ
Trees	90'	K2FV
Rohn 25	78'	K1MEM
Pole	65'	DJ0IA
Buildings	59'	YU7PFR
Self-supporting	40'	TI5EWL

vation and polarization, variable beamwidth control, and no sidelobes. In addition, it would have the capability of being scanned in wider arcs while simultaneously being operated in narrow mode. After daydreaming for a second, even the super stations compromise in this respect. That's basically why many use multiple antennas that offer different polarization and optimum angle of arrival reception capability.

steering

There are two basic means of steering low band arrays: mechanical and electrical. Two or more elements can be made to transmit or intercept signals from specific directions if certain amplitude and phase relationships at their terminals are satisfied. This is accomplished through the use of delay lines, lumped components, or combinations thereof. YU7PFR illustrates in **fig 7** his method of "steering" a three-element 80-meter wire array. The specific details have been provided in many articles and books. An excellent treatise on the design and construction process for phased vertical arrays (also applicable to horizontal arrays) can be found in a recent series of articles by Forrest Gehrke, K2BT.[2]

Mechanical rotation of the large arrays is not a task to be taken lightly. It requires careful consideration of many factors, including antenna wind-swept area,

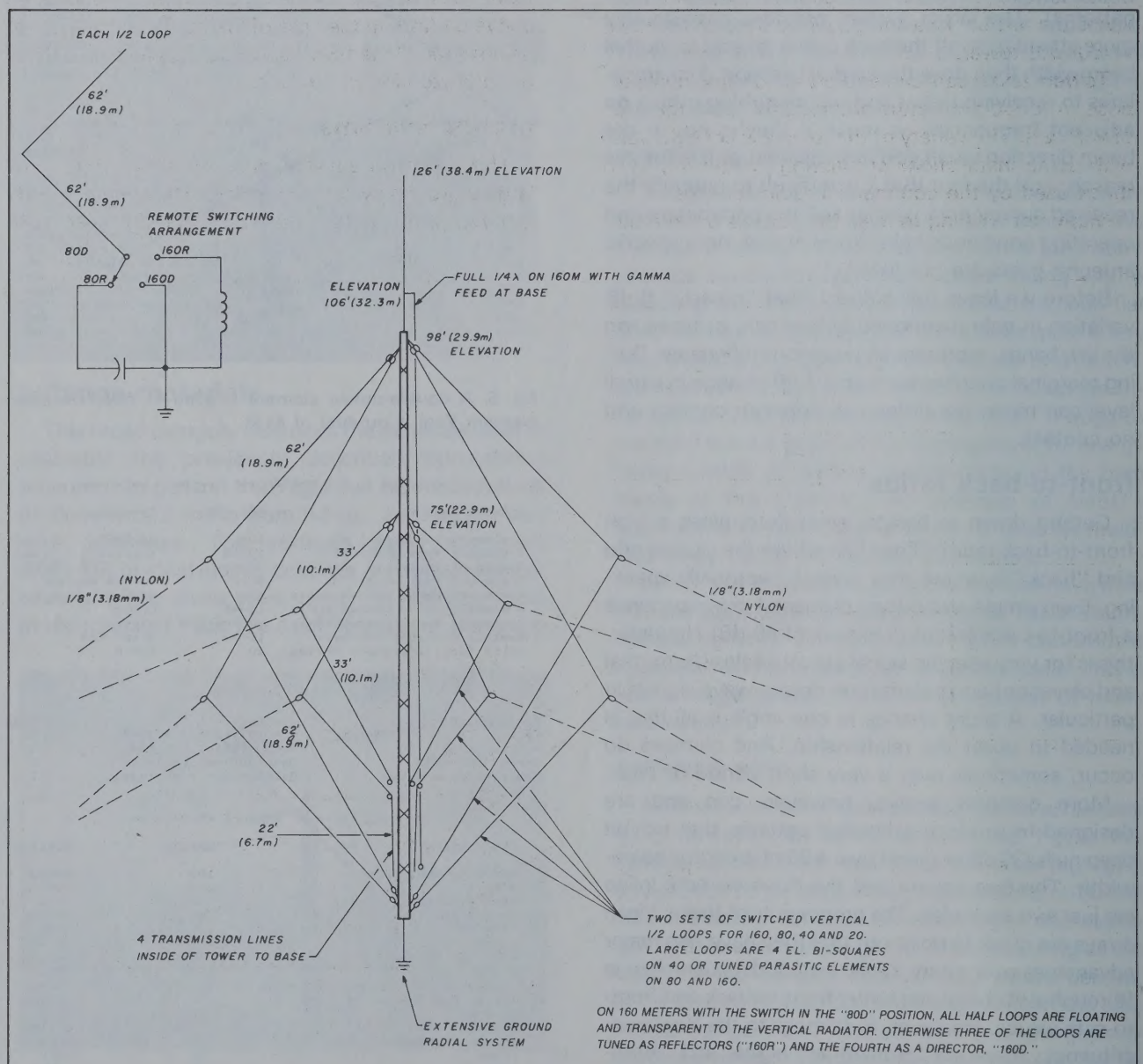
EACH 1/2 LOOP
62' (18.9m)
62' (18.9m)
REMOTE SWITCHING ARRANGEMENT
80D
160R
80R
160D
126' (38.4m) ELEVATION
ELEVATION 106' (32.3m)
FULL 1/4λ ON 160M WITH GAMMA FEED AT BASE
98' (29.9m) ELEVATION
62' (18.9m)
75' (22.9m) ELEVATION
33' (10.1m)
(NYLON) 1/8" (3.18mm)
1/8" (3.18mm) NYLON
33' (10.1m)
62' (18.9m)
22' (6.7m)
4 TRANSMISSION LINES INSIDE OF TOWER TO BASE
EXTENSIVE GROUND RADIAL SYSTEM
TWO SETS OF SWITCHED VERTICAL 1/2 LOOPS FOR 160, 80, 40 AND 20. LARGE LOOPS ARE 4 EL. BI-SQUARES ON 40 OR TUNED PARASITIC ELEMENTS ON 80 AND 160.
ON 160 METERS WITH THE SWITCH IN THE "80D" POSITION, ALL HALF LOOPS ARE FLOATING AND TRANSPARENT TO THE VERTICAL RADIATOR. OTHERWISE THREE OF THE LOOPS ARE TUNED AS REFLECTORS ("160R") AND THE FOURTH AS A DIRECTOR, "160D."

fig. 6. N4SU's multiband antenna array uses open wire line from the elements to the matching units.

mounting height, height above local terrain (i.e., is it shielded by trees from high winds?), weight, mast length, metallurgy, speed of rotation, weather conditions — both average and extreme — and expense, to name a few. To accomplish this task, the rotators listed in **table 7** are used by several of the superstations. Unfortunately, only a few of these responded to this particular survey question.

skyhooks that support these antennas

Man-made and natural structures consisting of towers, masts, buildings, and trees provide the support for the 80- and 160-meter antennas used by the stations surveyed. Considering the heights required, they probably represent the single greatest installation expense (excluding trees, of course). **Figure 8** illustrates the turnbuckles and guy lines used to tie down a 160-foot tower.

Towers and masts can and often do serve dual purpose as support structure and radiator, as in the case of verticals. The variety of the towers is considerable, with some installations surpassing, in quality, even those used by the commercial radio services.

Many not wishing to avail themselves of commercial units choose to build or modify other existing structures to suit their needs. Those fortunate enough to have tall trees on their property have been able to construct low band wire antennas that compete effectively with tower-mounted aluminum behemoths. On the other hand, it might surprise a few to see how *low* some of the big-gun stations have their antennas. **Table 8** is a compilation of some of the support structures used by the high-performance stations.

When a tower or mast is mounted on the roof of a building, the effective height of the antenna is not necessarily the combined heights. The building roof, depending on its dimensions, electrical characteristics, and separation from the antenna could determine an array factor with a much *higher* takeoff angle than would be indicated by the total height of the antenna above ground. In the case of EA8ADP, his strong signal into the United States would indicate that everything is working in his favor.

ground systems

This perennial question is asked all the time: how large a ground system is needed? The simple answer is *the larger the better*. Unless your antennas are situ-

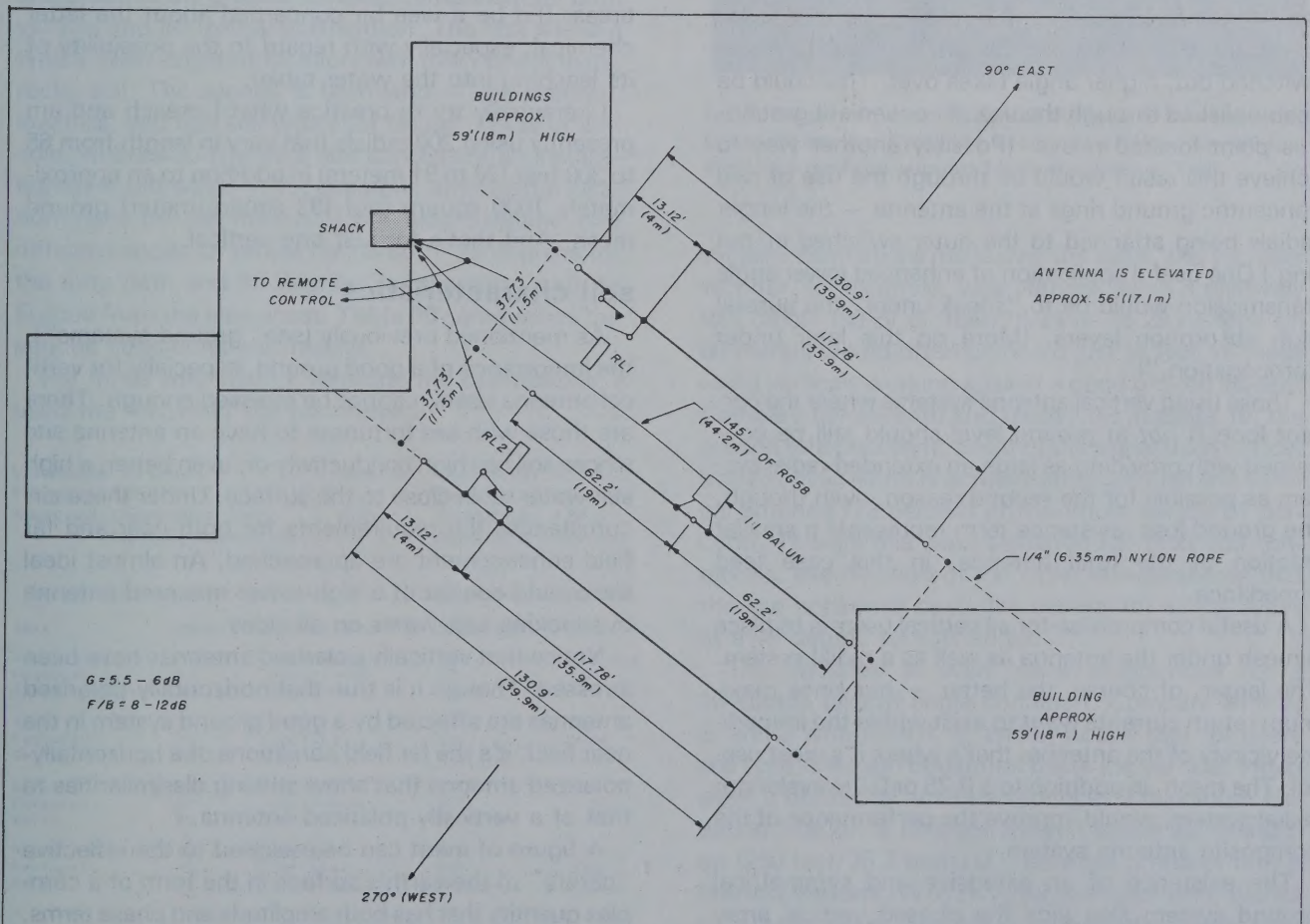

fig. 7. YU7PFR is able to switch antenna firing directions by opening and closing relays.

ated above an infinite extent, infinite conductivity ground plane, there is room for improvement. For those using verticals, two conditions should be met:
1. The immediate area around each vertical should have a high density of wire within a quarter wavelength of the radiators. A minimum of 100 radials is recommended. This determines and stabilizes the zone impedance and reduces losses, which is especially important if the current loop (current maximum) is close to or at ground level.
2. An extended ground or radial system should be installed as long as possible in the preferred transmission and reception directions. This increases the amount of energy present at truly low angles. *How long*, you ask? That's a function of several parameters, including propagation path and mode, distance, far field conductivity and permittivity (dielectric constant), solar activity, state of the geomagnetic field, transmitter power, and receive site conditions, to name just a few. Specifically, if I recall correctly, a six-wavelength radial system will produce a maximum elevation lobe at 6 degrees from the horizon using a single vertical.

SM6EHY suggested that it might be worthwhile to have the capability of remotely switching an extended radial ground system in and out. When switched in, lower angle of arrival signals are enhanced. When switched out, higher angle takes over. This could be accomplished through the use of convenient ground-bus point located relays. (Possibly another way to achieve this result would be through the use of *two* concentric ground rings at the antenna — the longer radials being attached to the outer switched in/out ring.) One useful application of enhanced lower angle transmission would be to "sneak under" the auroral high absorption layers. (More on this later under "propagation.")

Those using vertical antenna systems where the current loop is *not* at ground level should still be concerned with providing as large an extended radial system as possible for the second reason, even though, the ground loss resistance term represents a smaller fraction of the total antenna, in this case feed impedance.

A useful compromise for all vertical users is to place a mesh under the antenna as well as a radial system. The larger, of course, the better — but since maximum return currents *want* to exist within the immediate vicinity of the antenna, that's where it's most useful. The mesh, in addition to a 0.25 or 0.3 wavelength radial system, would improve the performance of the composite antenna system.

The existence of an extensive and symmetrical ground system also aids the phased vertical array designer. It eliminates one of the unknowns, or, stated differently, doesn't introduce yet another complex term to deal with. (Warning: before you begin quoting the above statements as gospel, I should mention that the information represents my own educated opinion, based on the work of others, whom, I believe, are correct).

An extensive ground system also aids the horizontal antenna user. It helps establish the distance between the antenna and its image (Green's function) and consequently determines the composite elevation pattern. This represents an increase of up to 6 dB in the total signal (sky and ground reflected wave) at a specific takeoff angle. If this angle is optimum for the particular path, then, in simple terms your signal will be louder at the point of reception and vice-versa. **Table 9** is a compilation of the ground systems used by the super-stations. Notice, however, that only a few of the stations that utilize horizontal arrays have extensive ground systems.

In addition, NW5K uses 30 square feet of chicken mesh; 4X4NJ puts 2 pounds of copper sulphate around his ground stakes, and N7CKD, besides using 55 square feet of chicken mesh and a half-mile of 5-foot (1.52 meters) chain link fence and barbed wire, pours 500 pounds of rock salt and 150 pounds of copper sulphate into trenches that he keeps moist at all times. (I'd be a wee bit concerned about the latter chemical, especially with regard to the possibility of its leaching into the water table).

I personally try to practice what I preach and am presently using 200 radials that vary in length from 65 to 300 feet (20 to 91 meters) in addition to an approximately 1000 square foot (93 square meter) ground mesh. And that's for just one vertical.

soil characteristics

As mentioned previously (see "ground systems"), the importance of a good ground, especially for vertical antenna users, cannot be stressed enough. There are those who are fortunate to have an antenna site whose soil has high conductivity or, even better, a high salt water table close to the surface. Under these circumstances the requirements for both near and far field enhancement are approached. An almost ideal site would consist of a high tower mounted antenna overlooking salt water on all sides.

Notice that vertically polarized antennas have been stressed. Though it is true that horizontally-polarized antennas are affected by a good ground system in the near field, it's the far field conditions of a horizontally-polarized antenna that show striking dissimilarities to that of a vertically-polarized antenna.

A figure of merit can be assigned to the reflective "nature" of the earth's surface in the form of a complex quantity that has both amplitude and phase terms. This reflection coefficient is very different for signals impinging on the earth that are vertically, rather than

Table 9. Ground systems

Radials	Length	Gnd rods	Length	Station
3	125'	3	8'	K3ZO
–	–	3	8'	VE3BMV
2	131'	–	–	PA3DFU
3	135'	4	10'	4X4NJ
65	65'+	–	–	SP3GEM
50	62'	–	–	VK6LK
20	75'	–	–	VE7BS
125	65'	4	8'	NW5K
90	80'	6	6'	W3BGN
–	–	9	6.6'	JF1IST
320	80'	500	4'	W1NH
100	130'	1	2'	K5UR
65	130'	–	–	N4RJ
5	250'	–	–	N4RJ
400	70-1000'	30	10'	SM6EHY
496	65'	–	–	W4DR
15	65'	3	6'	DJ0IA
300-360	30-130	–	–	W1FV

horizontally, polarized (i.e., the E-field of the electromagnetic wave is vertical or horizontal by definition). The reflection coefficient is a function of the conductivity and dielectric constant of the earth, the frequency, and the angle by which the wave strikes the surface.[3]

Let's consider three sites and observe the amplitude and phase of the ground reflected component for both vertical and horizontal polarization. The first site is a typical New England location with low conductivity, rocky soil. The second is farm land — the pastoral, low hills, and rich soil typical of Dallas, Texas or Lincoln, Nebraska. The third site consists of an installation over salt water — for example, any coastal location right on the beach. Let's also examine two different angles of arrival (or takeoff); 15 degrees for the long path and 45 degrees for the short path to Europe from the east coast. **Table 10** summarizes the various conditions and results.

For those who wish to replicate the calculations, I used the following soil parameters:

Wavelength: 80 meters
Frequency: 3.75 MHz
Rocky soil: Conductivity: 2 mS
Dielectric constant: 14

Pastoral: Conductivity: 30 mS
Dielectric constant: 20

Salty: Conductivity: 4.64 S
Dielectric constant: 81

Table 10. Reflection coefficient vs soil type and takeoff angle

Soil	Angle	Polarization	Amplitude	Phase
Rocky	15	Horizontal	88% of max	2.00 deg
Pastoral	15	Horizontal	97%	1.63
Salty	15	Horizontal	99.75%	0.14
Rocky	15	Vertical	17%	75.53
Pastoral	15	Vertical	62%	25.02
Salty	15	Vertical	96%	2.10
Rocky	45	Horizontal	72%	6.24
Pastoral	45	Horizontal	92%	4.45
Salty	45	Horizontal	99.75%	0.14
Rocky	45	Vertical	51%	12.44
Pastoral	45	Vertical	84%	8.85
Salty	45	Vertical	98.67%	0.77

interpretation of results

There are a few eye-openers here that help to explain observations made over the years. Did you ever wonder, for example, why stations using a relatively low dipole (50 or 60 feet/15.24 or 18.28 meters) on 80 meters would often be heard just as well as those using verticals working against a good ground screen? Compare the seventh and tenth lines in **table 10**; the ground reflected component of the signal from the low horizontal antenna is actually stronger than the vertical antenna (72 percent of maximum versus 51 percent). Though this was calculated for rocky soil conditions, examination of the other entries shows that the low horizontal beats the vertical for all soil types at a *45* degree takeoff angle.

The situation is even more pronounced for a 15-degree takeoff angle condition. Compare lines 1, 2, and 3 with lines 4, 5, and 6; notice that for every soil type, the high horizontal beats the vertical. However, a horizontal antenna produces a maximum elevation lobe of 15 degrees when it is one wavelength up (250 feet/76.2 meters). There are probably only a few low-banders (WA1EKV, for example) who, thanks to a high tower and local topography, have their antennas at this height. Consequently, for that low-angle, low-path shot, it's perhaps easy to construct

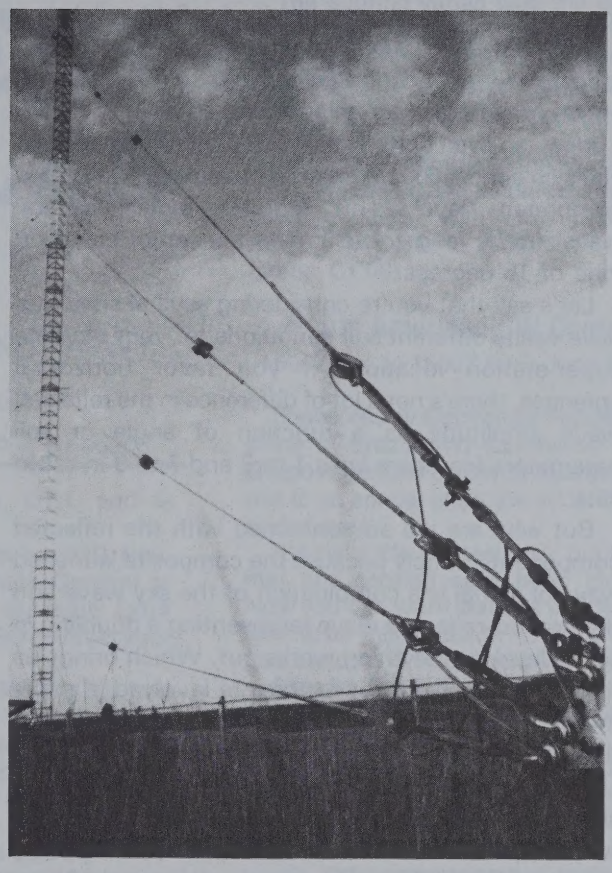

fig. 8. To gain an appreciation of the type of tower needed to handle low-band rotaries, examine VE2HQ's new 160-foot structure ready to support his three-element Yagi.

a vertical and get approximately the same performance as you would with the high horizontal. (This is true for medium to high conductivity far field soils).

Finally, if you're a lover of verticals, then the importance of an extended radial ground screen becomes apparent when you examine lines 4 and 6 in **table 10.** Copper, an even better conductor than salt water, provides an almost 600 percent improvement in reflected component level. This requires radials several wavelengths long to achieve a maximum elevation lobe of 15 degrees.

Let's say that you're considering several sites that have vastly different soil conditions for your ultimate super-station location. If you favor horizontal antennas, there's not a lot of difference in the reflected wave amplitude as a function of angle or soil parameters (compare lines 1 to 3 and 7 to 9 in **table 10.**)

But why are we so concerned with the reflected component? Simply because the composite launched wave or signal is a combination of the sky wave and the ground-reflected wave representing a doubling in signal level if everything works out. Which brings us to the next point: what factors are involved in maximum signal transmission/reception? The answer is that at the optimum launched angle (takeoff angle) — i.e. the angle best suited for that path, time of day, solar activity, and geomagnetic field conditions — the two components must add constructively. This means that the phase relationships must also match. Now, since the earth looks like a big capacitor, the reflected component always lags (negative phase angle) the incident wave. Notice in the last column of **table 10** the amount of phase delay is listed for the various soils, takeoff angles, and polarizations. It normally follows that if the amplitude of the reflected component is near unity, then the phase angle is quite small.

Upon examining all the survey responses no commonality between soil type and station performance could be discerned. The super-stations run the gamut from rocky to salt water ground characteristics and, in some cases, possibly have chosen their antennas carefully on this basis.

concluding installment

In Part 2 of this article, we'll examine responses from those surveyed to see how they rate their sites, including descriptions of near- and far-field conditions, obstructions, and noise sources with which they must contend.

We'll also consider the danger of lightning strikes and see what precautions these high-performance station operators, particularly those with exposed installations, have taken, both at the shack and at the antennas. Those who've sustained lightning strikes will describe the damage that occurred.

Construction of large antenna systems — whether they be rotaries, long wire antennas, or other elaborate systems — requires extensive planning, labor, expense, and maintenence. What periodic maintenence do these high-performance station operators recommend? Most of these stations have or are using different antennas — how do they compare? Next month, you'll also see how owners rate their stations against the competition. Propagation notes, including some startling results derived from thousands of hours of operating time by those with rotatable and switchable arrays, will be included.

It appears that the days of simple verticals and dipoles are rapidly passing; in our concluding installment, high-performance station owners and operators will describe additional improvements they plan to make to their stations to make them even more competitive in the future.

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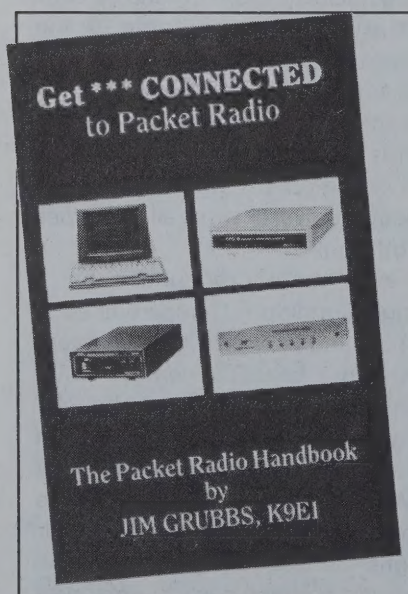

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CONTEST RULES

FRANK ANZALONE, W1WY

CQ Magazine

14 Sherwood Road, Stamford, CT 06905

Calendar of Events

May	**24-25**	**CQ WW WPX CW Contest**
May	27-28	CLARA AC/DC "Mystery"
My31	Jn-1	National 6 Meter Contest
June	7	YLRL Novice/Tech. Day
June	7-8	ARRL VHF QSO Party
June	7-8	RSGB National Field Day
June	14-15	So. American CW Contest
June	14-15	All Asian Phone Contest
June	21-22	NINE Land CW QSO Party
June	28-29	ARRL Field Day
July	1	Canada Day Contest
July	4-5	Clinton ARC Special Event
July	5-6	Venezuelan SSB Contest
July	12-13	IARU HF Championship
July	**19-20**	**CQ VHF WPX Contest**
July	26-27	"Armadillo CW Run"
July	26-27	Venezuelan CW Contest
July	26-28	MARAC County Hunters CW
Aug.	9-10	European CW Contest
Aug.	16-17	New Mexico QSO Party
Aug.	23-24	All Asian CW Contest
Sep.	3-5	YLRL "Howdy Days"
Sep.	13-14	European Phone Contest
Sep.	20-21	Scandinavian CW Activity
Sep.	27-28	Scandinavian SSB Activity
Oct.	4-5	IRSA World Championship
Oct.	15-17	YLRL Anniv. CW Party
Oct.	**25-26**	**CQ WW DX Phone Contest**
Oct.	29-31	YLRL Anniv. SSB Party
Nov.	8-9	European RTTY Contest
Nov.	**29-30**	**CQ WW DX CW Contest**

YLRL Novice/Technician Day

1700Z to 2100Z Saturday, June 7

This is a new one organized by the Young Ladies Radio League to promote activity in the Novice bands. It is open to all licensed women operators throughout the world.

Exchange: RST, name, QTH, and license class.

Scoring: Three points for each YL Novice/Tech., 2 points for each General or Advanced, and 1 point for each Extra class YL worked. Total QSO points is your final score.

Frequencies: 3730, 7130, 21130, and 28130, ± 10 kHz of each Novice band.

Operation, of course, will be on CW. A station may be contacted once only for scoring credit, and power is limited to 200 watts.

Awards: To the top-scoring Novice/Tech. and General class and higher YL in the form of YLRL postcards.

Logs must be printed or typed (no carbons), and be sure to indicate your license class and sign your log.

Entries must be received by July 7th and go to: Mary Lou Brown, NM7N, 504 Channel View Drive, Anacortes, WA 98221.

RSGB National Field Day

1500 to 1500Z Sat.-Sun., June 7-8

Activity for this CW-only Field Day is not confined to Great Britain. You will also hear some portable activity out of Germany and Switzerland.

Although overseas stations are not directly eligible, they are invited to participate and submit a report of the stations worked.

A certificate will be awarded to the overseas station in each continent that shows the most contacts. Send your logs to: RSGB HF Contest Committee, c/o Mr. D.J. Lawley, 220 Shipbourne Road, Tonbridge, Kent, TN10 3EL, England.

ARRL VHF Contest

1800-0300Z Sat.-Mon., June 7-8

Action will be found on the 50, 144, 220, and 420 MHz bands, and even higher up in the spectrum.

The scoring varies with the different bands used, and there are certain requirements and restrictions in the rules. Working WAS on 6 meters is a possibility. Complete rules will be found in the May issue of *QST*.

I strongly recommend that you write to ARRL Headquarters for official forms. Include an SASE with your request to: ARRL VHF Contest, 225 Main St., Newington, CT 06111.

South American CW Contest

1500Z Sat. to 1500Z Sun., June 14-15

Sponsored by *Electronica Popular* magazine of Brazil, and supervised by the Grupo Argentino de CW of Buenos Aires, this is an annual affair the second weekend of June.

It's still a CW contest only, but the format and scoring have been changed. Now you can work stations in other continents as well as South Americans. Use all 6 bands, 1.8 through 28 MHz.

Classes: Single operator both single and all band, multi-operator, single transmitter, all band only and SWL.

Exchange: RST plus a QSO number starting with 001.

Points: Contacts with stations in own country zero points but okay for multiplier credit. Other countries but same continent, 2 points. Countries in other continents, 4 points. Contacts with South American stations, 8 points. (For stations outside of S.A.)

Multiplier: Different countries (DXCC list) plus the different South American prefixes worked on each band.

Final Score: Total QSO points times the sum total multipliers from each band.

Awards: Certificates to the three top-scoring stations in each country in each class.

Use a separate log sheet for each band and a summary sheet showing the scoring and other essential information. Include an SAE and one IRC for a copy of results.

Logs must be received no later than August 31st and go to: WWSA Contest Committee, P.O. Box 18003, 20772 Rio de Janeiro, RJ, Brasil.

All Asian DX Contest

Phone: June 14-15 C.W.: Aug. 23-24
0000Z Sat. to 2400Z Sun.

This is the 27th year of this activity sponsored by the JARL. The exchange is between Asian countries and the rest of the world.

Classifications: Single operator, both

single and all band. Multi-operator, both single and multi-transmitter, all band only (one signal per band only).

Club stations are classified as multi-operator and each operator will give his age in the exchange.

Exchange: For OM's—RS(T) plus age of operator. For YL's—RS(T) and ØØ.

Scoring: 3 points for contacts on 160; 2 points for contacts on 80; 1 point on all other bands. (KA contacts do not count.)

Multiplier: For Asians the multiplier is determined by the number of different countries worked on each band (DXCC list). For non-Asians it is determined by the number of different Asian prefixes worked on each band (*CQ* WPX list).

Final Score: Total QSO points from all bands times the sum of the multiplier from each band.

Keep in mind that non-Asians use Asian prefixes as their multiplier, not countries.

Note: JD1 stations on Ogasawara (Bonin and Volcano) are in Asia, and JD1 stations on Minamitori Shima (Marcus) are in Oceania.

Awards: Certificates to the top scorers, both phone and CW, in each country and each U.S. call area. In each class, both single band and all band, up to the fifth rank, depending on the number of returns. Medals to the all-band continental leaders, both single and multi-operator.

Logs: Keep all times in GMT. Use a separate column for the country or prefix multiplier, and fill in only the first time it is worked. Use a separate log for each band. Include a summary sheet showing the scoring and other information, and a signed declaration that all rules and regulations have been observed.

There is a strict disqualification clause for taking credit for duplicate contacts in excess of 2% of the total on each band, as well as other infractions.

Logs must be received no later than Sept. 30th for the Phone section, and Nov. 30th for the CW section. They go to: JARL Contest Committee, P.O. Box 377, Tokyo Central, Japan.

Asian Country List: A4; A5; A6; A7; A9; AP; BV; BY; CR9; EP; HL/HM; HS; HZ/7Z; JA-JR; JD1; JT; JY; OD; S2, TA; UA/UK/UV/UW9-Ø; UD6; UK6C, D, K; UF6/UK6F, O, Q, V; UG/UK6G; UH8/UK8H; UI8/UK8A, G, I, L, O, T, Z; UJ8/UK8J, R; UL7/UK7; UM8/UK8M, N; VS6; VS9M/8Q; VU; VU (Andaman & Nicobar); VU (Laccadive); XU; XV/3W; XW; XZ; YA; YI; YK; ZC4/5B4; IS (Spratly); 4S; 4W; 4X/4Z; 70 (S. Yemen); 70 (Kamaran); 8Z4; 9K; 9M2; 9N; 9V; (Abu Ail).

NINE Land C.W. Contest

1700Z Sat. to 1700Z Sun., June 21–22

This is the fourth annual contest organized by the Joliet ARS in which there is no limit to whom you can work; however, contact with NINE Land stations (Ill., Ind., and Wisc.) have double QSO point value. Only one contact per band with the same station permitted.

Classes: Single and multi-operator, one transmitter and portable field operation, multi-operator maximum of two transmitters.

Exchange: Consecutive QSO numbers beginning with 001, and state, VE province, or DX country.

Scoring: Contacts with NINE Land stations count 2 points; with all other stations 1 point.

Multiplier: Number of states, VE provinces, and DX countries worked (counted once only). There is a bonus multiplier of 1 for each 20 NINE Land stations worked.

Final Score: Total QSO points from all bands times the number of states, provinces, DX countries, and bonus points worked.

Frequencies: 1805 and 60 kHz up from lower edge of 10 through 80 meters (no 30 meters). Novice: 25 kHz up from low edge of their bands.

Awards: Certificates to high scorers in each class in each state, VE province, and DX country. Plaques to high scorer in NINE Land and outside NINE Land.

Dupe sheets are required for entries with over 200 contacts, and a summary sheet showing the scoring, etc. Include a large SASE for a copy of the results.

Mailing deadline is July 31st to: Joliet ARS, Att.: Paula Franke, WB9TBU, P.O. Box 873, Beecher, IL 60401.

N9AW and K8CW were the 1985 Contest plaque winners.

ARRL Field Day

1800–2100Z Sat.–Sun., June 28–29

Without a doubt, this activity generates more stateside participation in manpower than any other amateur radio activity. It is mostly a club-organized activity, and therefore requires that the coordinator be knowledgeable about what is required.

Entries are separated into many classes. Rules and requirements are quite extensive and will be found in the May issue of *QST*. It is advisable that you read them thoroughly.

Official log forms are a must. Direct your request with a large SASE to the ARRL, ARRL Field Day, 225 Main St., Newington, CT 06111.

Canada Day Contest

0000 to 2400Z Tues., July 1

Again sponsored by the Canadian Amateur Radio Federation, this contest follows the same pattern as the Canada Day Contest last December.

Activity will be on all bands, 2 through 160 meters, phone and CW. Single operator, single and all band, multi-operator all band only.

The same station may be worked on each band and each mode for QSO and multiplier credit.

Exchange: RS(T) and QSO number starting with 001, and province.

Scoring: 10 points for each contact with Canada, 4 points if with others, and 20 bonus points for each contact with any CARF official news station using the suffix TCA or VCA.

Multiplier: Number of VE provinces/territories worked on each band and mode. Total of 26—13 on CW and 13 on phone. Contacts with stations outside of Canada count for QSO points no multiplier.

Frequencies: 1810, 1840, 3525, 3775, 7025, 7070, 7155, 14025, 14150, 21025, 21250, 28025, 28500, 50040, 50110, 144090, 146520.

Awards: Certificates to the top-scoring entries in each class, in each VE prov./terr., U.S. call area, and DX country. Trophies to single operator, all band, and multi-operator winners.

Include a summary sheet with your log showing the scoring, etc., and a dupe sheet. Official log forms are available.

Mailing deadline is July 31st to: CARF Contest, c/o N. Waltho, VE6VW, P.O. Box 1890, Morinville, AB, TØG 1PØ Canada.

Venezuelan Contest

Phone: July 5–6 C.W.: July 26–27
0000Z Saturday to 2400Z Sunday

Exchange: RS(T) plus a QSO number starting with 001.

Points: Contacts between stations in different countries, 2 points. Between stations in the same country zero (0), but permitted for multiplier credit.

Multiplier: One for each YV call area, each U.S. call area, and each country (including own) worked on each band.

Final Score: Total QSO points from all bands multiplied by the sum of the multiplier from each band.

Awards: A plaque to the highest scorer in each class. Medals to the highest scoring single operator in each continent and the Bolivarian countries (Bolivia, Colombia, Ecuador, Panama, Peru).

Mailing deadline is August 15th for phone entries and September 15th for CW. They go to: Radio Club Venezolano, P.O. Box 2285, Caracas 1010-A Venezuela.

1985 SAC RESULTS

SCANDINAVIAN TOP SCORE

	CW		FONE	
SINGLE OPERATOR, ALL BANDS				
1	OH6BA	714504	OH2BH&	958919
2	OH2BH	688176	LA7JO	684926
3	SM5GMG	531054	OH1RY	652092
4	OH8PF	504598	OH8PF	627000
5	OZ1LO	498149	OH5BM	621072
6	OH1MA	468802	OH3YI	550290
7	OH2PM	452960	OH4RH	501572
8	LA3WAA	438438	SM5CSS	324094
9	OH3YI	436500	OZ4MD	323272
10	SM0CCE	376960	OH4ML	290682
MULTI OPERATOR, SINGLE TX, ALL BANDS				
1	OH5NQ	533127	OH5NQ	768604
2	SK5EU	526832	OH7AB	668628
3	LA5X	498150	SL0ZG	607456
4	LA5UF	473904	OH1AF	566299
5	SL0ZG	473904	LA5X	441186
6	OH2TI	420563	LA2AB	205170
7	OH2AQ/1	411320	LA1H	191216
8	OH6AW	397170	OH7AI	177632
9	SK4EA	390450	OH6AD	159042
10	OH2AP	356670	SL3ZV	137842
MULTI OPERATOR, MULTI TX, ALL BANDS				
1	OH7AB	985364	OH3AA	959004
2	OH3AA	947155		
3	OH1AF	878451		
4	SK6GX	69934		
SINGLE OPERATOR, 3.5 MHz				
1	OH2JA	56870	OH2JA	47541
2	LA0CX	37074	SM8BJI	8932
3	OZ4CG	22272		
4	OH5SS	19488		
5	SM5BJI	15642		
SINGLE OPERATOR, 7 MHz				
1	SM4CMG	115196	SM4CMG	87502
2	OH2HE	81957	SM5HFB	66250
3	SM6EAN	72495	LA9TCA	64476
4	OH1NK	54604	SM6INC	50471
5	LA9HW	34816	SK2AU&	37338
SINGLE OPERATOR, 14 MHZ				
1	OH2BVI	83793	OH2BVI	159180
2	SM7DUZ	81290	OH8AV	156921
3	OH6MC	77775	OH8LQ	139562
4	OH8LQ	77469	OH6YF	114660
5	OH6AM&	70700	OH2WI	101748
SINGLE OPERATOR, 21 MHZ				
1	OH5KE	8751	OH8VJ	3391
2	OH7MS	4554	OH3UJ	793
3	OH8VJ	3825		
4	SK5AJ&	2340		
5	LA9M	2130		
SINGLE OPERATOR, QRP, ALL BANDS				
1	SM0BYD	10414	LA1XDA	6116
2	SM7KWE	7781	LA3JAA	1344
3	OH3GD	6960	SM5CCT	279
4	LA1XDA	1605		
5	OH5ZK	1157		
SWL, ALL BANDS				
1			OH7-254	150120
2			OZ-DR2293	4466
3			LA-M-10025	2070

CALL	QSO#	PTS	MLT	TOTAL
CANADA - SINGLE OP - FONE				
VE1NG*	159	159	40	6360
VE8RCS	109	116	36	4176
VE1AIH	24	24	16	384
VE3MAM	27	27	13	351
VE3LKR	15	15	11	165
USA, 1st CALLAREA - SINGLE OP - FONE				
W1BZ*	30	30	19	570
WA1FCN	27	27	17	459
USA, 2nd CALLAREA - SINGLE OP - FONE				
KY2P*	13	13	12	156
USA, 6th CALLAREA - SINGLE OP - FONE				
K6EID*	48	48	28	1344
W6EOF	41	41	23	943
G3MHV/W6	17	17	13	221
USA, 9th CALLAREA - SINGLE OP - FONE				
W9SS*	69	69	31	2139
USA, 10th CALLAREA - SINGLE OP - FONE				
AJ0N*	36	36	20	720
CANADA - SINGLE OP - CW				
VE1NG*	102	102	33	3366
VE3LKR	12	12	11	132
AUSTRALIA - SINGLE OP - CW				
VK2BQQ*	43	75	33	1725
VK4TT	19	19	10	190
USA, 1st CALLAREA - SINGLE OP - CW				
KA1DWX*	80	80	27	2160
W1BZ	43	43	26	1118
W1OPJ	2	2	2	4
USA, 2nd CALLAREA - SINGLE OP - CW				
K2SX*	76	78	29	2262
USA, 3rd CALLAREA - SINGLE OP - CW				
K3ZO*	184	278	61	16958
W3GM	184	248	60	14880
USA, 4th CALLAREA - SINGLE OP - CW				
K4BAI*	44	43	24	1032
K4FPF	35	35	21	735
USA, 5th CALLAREA - SINGLE OP - CW				
K5BDX*	51	51	24	1224
USA, 8th CALLAREA - SINGLE OP - CW				
K8SS*	106	103	30	3090
USA, 10th CALLAREA - SINGLE OP - CW				
AJ0N*	72	72	28	2016

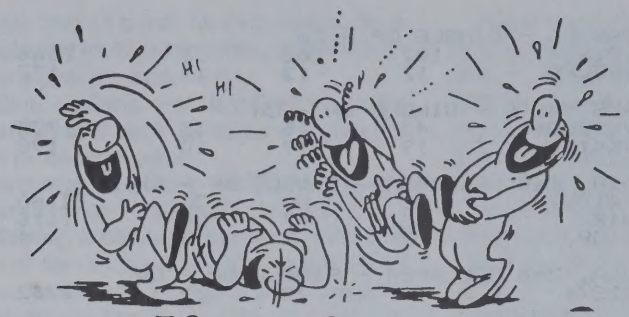
1985 ASIAN CONTEST RESULTS CW

NORTH AMERICA

DOMINICAN REPUBLIC				
★HIϕA	14	6	5	30
PANAMA				
★HP1XKR	7	20	14	280
CANADA				
★VE2AEJ	14	29	19	551
VE3EWY	14	28	19	532
★VE8RCS	M	118	52	6136
JAMAICA				
★6Y5HN	M	15	11	165
USA				
★WϕZV	1.9	21	5	105
★N7AM	3.5	186	36	6696
★W6BIP	3.5	144	29	4176
W7DRA/7	3.5	22	9	198
★W6KP	7	546	77	42042
K6NA	7	517	78	40326
N6AW	7	503	75	37725
★K5NW	7	310	63	19530
K6CL	7	31	22	682
★K1XM	7	28	21	588
★KV9S	7	23	14	332
★W5FO	14	172	53	9116
★N6IC	14	132	47	6204
★K4RZ	14	123	46	5658
★K9RHY	14	109	43	4687
★WD8IXE	14	88	38	3344
★K3TW	14	72	36	2592
W8EX	14	62	36	2232
★KϕRWL	14	71	31	2201
N4MM	14	58	35	2030
WA8YTM	14	45	23	1035
★K2JT	14	36	22	836
KA2BBZ	14	35	21	735
W2HG	14	26	19	494
K4BAI	14	21	18	378
KW2J	14	17	14	238
W5EIJ	14	12	12	144
★KR1R	14	12	9	108
W1END	14	9	8	72
W5TVX	14	29	1	29
W6IFC	14	18	1	18
W1OPJ	14	3	3	9
★W6TMD	M	733	154	112882
★K3ZO	M	270	102	27540
WA6FGV	M	277	98	27146
★NN7L	M	201	76	15276
★K1ZM	M	186	80	14880
K6EID	M	178	82	14546
W3GM	M	208	61	12668
KB7G	M	165	68	11220
★N5JB	M	160	68	10880
AJ6V	M	126	63	7938
W7YF	M	108	51	5508
KY7M	M	99	53	5247
K1KI	M	101	51	5151
W5PWG	M	83	37	3071
KQ1F	M	62	39	2418
W6OUL	M	51	38	1938
W5OB	M	41	27	1107
K7LXC	M	21	17	357
W5NR	M	24	3	72
★NR5M	MM	776	174	135024
★N6ADI	MM	679	148	100492
K5LZO	MM	652	153	99756
K6ZM	MM	631	141	91296
★WϕRSG	MM	318	112	35616

SOUTH AMERICA

URUGAY				
★CX6BBH	3.5	110	21	6050
ARGENTINA				
★LU4FDM	7	161	59	9499
★LU1EWL	M	102	68	6936
LU7JI	M	103	19	1957
BRASIL				
★PY1APS	7	54	29	1566
PY5AKW	7	23	9	207
PY2FFW	7	8	2	16
★PY5MR	M	79	45	3555
PY3BC	M	70	46	3220
VENEZUELA				
★YV7QP	14	9	7	63



radio funnies

Mike Crabtree, ABØX

The DXers best seller list

Knowing that all DXers like to keep abreast of the latest trends within our hobby and the state of the art of DX, a list has been compiled for your convenience of the most popular and thought provoking publications on DX and contesting. It is recommended that the serious DXers obtain several of these books for their own personal library:

Never Climb a Crank-up Tower
By Stubby Fengers

Is Phillystran Really Better?
By Guy Wyer

What's the Best Type of Keyer?
By I. M. Bick

American Hams Should Buy American Gear!
By Iona Drake

Servicing Amateur Transceivers
By Tex Nician

Another Look at Reflected Power
By S. W. Arbridge

What's the Best Type of Feedline?
By Coe Axle

You Can Still Build Your Own Gear
By Heath Kitts

Receiver Incremental Tuning
By Clara Fire

How to Build Taller Towers
By "Bayou" Moore Rohn

The Heart of Modern Linears
By I. "Mac" Toobs

How to Really Get Out!
By Ray D. Ate

Discerning Slight Signal Improvements
By Desi Bell

A DXers GUIDE: Lessons In Street Transit Skills

Douglas Zwiebel, KR2Q

Not so many years ago, two good friends went off to grammar school together. As their parents drove them to school that first day they saw many people crossing the street at most any spot. Most people crossed at the corner but others crossed at the middle. Some walked, some ran. Some waited for an absolutely clear block, while still others would dodge in and out of the moving vehicles. "Boy, can you figure out this street crossing, Barry?" asked Gene. "No, it's a mess." said Barry. They knew that they would have to walk after that first day because they lived only one block away from school. Their mothers gave each boy clear instructions. "Follow your teachers and when you cross the street, listen and obey the crossing guards!" That was clear enough and a good thing too; this street crossing stuff looked real complicated. That night Barry and Gene sat and thought about crossing that first street. It was exciting and scary at the same time. "Isn't there a BEST way to cross?" they both wondered.

Morning saw both boys greet each other at the corner. "Hi Gene, are you ready to cross it?" "Yea, remember to follow Mom's instructions." said Gene. At the corner across from the school Barry and Gene were joined by lots of their new school mates. All stood ready. A retired policeman was there along with some older students. Some of these students had on bright yellow belts and bands. These were their marks of distinction. They had achieved where others had not; or so some thought. The old cop gave a nod and the special students walked out into the street. It was clear that they had been there before. They raised their arms and signaled. The cars stopped. "OBEY ME CHILDREN, AMBULATE! PUSH NOT, NOR SHOVE." they cautioned. "USE THE GOLDEN WAY OF ORDERLINESS. CROSS ONE AT A TIME." This was so they could view each new street crosser and admire their own work. It also let the novice street crossers view with much awe the sight of the holy safety patrol. "Boy," admired Barry, "some day we might help others cross the street." He imagined HIS golden belts and HIS arms uplifted so that all might see that he too had strength and wisdom. Every day, going and coming, all the children obeyed.

Pretty soon it was June and the kids were out on their own. Life got pretty boring on one block and the kids got adventurous. "Hey Barry, let's go to the playground down the street." suggested Gene. "Great," said Barry, "I'll get my Mom. She's like a safety patrol." and off he ran. Gene knew that Barry's mom would work. He'd seen lots of kids get help from their mom or big sisters to cross the street. Gene thought some more. "Maybe I'll do it myself! The street to the playground isn't as big as the one to school." Gene approached the street. Slowly, carefully, he ventured out. There were no cars and he sprinted across. "This was a good place to start!" he thought and went over to the sandbox.

Next September and both boys were back in school. After school, at the school corner, both

boys were standing with a bunch of other kids waiting to cross. There were the big kids in golden bands. Gene saw some other friends off the side and went to join them. "Hey, what are you guys doing?" he asked. "We're going to cross the street here!" they answered. Gene thought about it and said, "Okay."

Barry, back with the original group, watched nervously. "He's crazy, what a nut! Imagine, crossing the street on his own." The golden ones looked and warned, "DO NOT CROSS THE STREET WITHOUT PAYING ME HONOR AND RESPECT. CROSS WHERE I SAY LEST YE BE SMITTEN BY INDEPENDENCE. COME BE MY SHEEP AND FOLLOW ME AND I WILL GUIDE YOU TO MANY STREETS OF WHICH YE DREAM." Barry shuddered at these words as did the other followers of the Way.

Gene crossed the street with the independent street crossers. He was filled with happiness. Now he could cross the street and perhaps all streets to come. Barry crossed the street under the watchful eyes. One guard said, "GOOD BOY, BARRY." Barry was happy that one of those who wore golden belts and had wisdom could recognize him and call him by name. Surely, he too was now at least a little bit holy. The golden one continued, "DON'T YE BE TEMPTED TO CROSS THE STREET ON YOUR OWN OR SURELY THE DEVIL WILL CONSUME YE AND NEVER AGAIN WILL YOU BE BLESSED WITH MY GOOD GRACES. YOU WILL BE DOOMED TO LIFE ON ONE BLOCK." Barry thanked the guard and swore allegiance to him and the Way.

Gene was feeling very good. He was crossing many streets and having lots of fun. He was also meeting lots of other independent street crossers. There were all sorts of 'em; big, small, fast, and slow. They all had fun and would meet now and then at more or less random times, for independent crossers are indeed independent. At these meetings they would exchange ideas on street crossing; what's the newest method, when is the best time, etc. Gene learned that some streets require running, some require dodging. Some have potholes, some have puddles. Some even have canine traps that force you to watch traffic AND look down. Gene was amazed at all the techniques. "How did you ever learn all this?" Gene questioned one old timer. "Time, experiences, and most of all patience and careful observation." Gene always listened intently. He found that some people are completely devoted to independent street crossing. They move to New York or L.A. They seek wider and wider streets with more and more cars. They even pursue highways and super highways! These few become so agile that they can cross any street with ease. Gene spent his high school and college years being an independent street crosser. His ability grew. He could even cross a highway wearing little shoes! Gene became a legend in all the land.

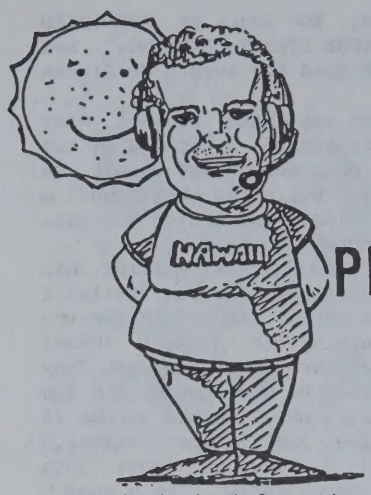
But what of the followers of the Way? After grammar school, there were many streets of larger size and more cars than they had before seen. Some of them withdrew and cried, "Oh! Please send us a leader so that we may be saved for we still wish to cross the street but are ignorant." And out of the darkness came one who raised his arms in the manner of the golden ones and declared with a voice much louder than two lungs PEP, "COME UNTO ME. BE MY SHEEP. RENDER PRAISE AND COIN AND I WILL LEAD YOU ACROSS THE STREET." whereupon the children huddled near. "IF YOU WISH MY DIVINE INTERVENTION, YOU MUST BUILD UNTO ME A GREAT MONUMENT. IT SHALL BE 21.3 UNITS HIGH AND EACH DAY AT THE ASSIGNED TIME YOU SHALL BOW DOWN AND PRAISE THE WAY. YOU SHALL MINISTER TO YOUR NEIGHBORS. WHEN THE NUMBER OF NEW SHEEP YOU BRING IS SUCH, YOU SHALL BE APPOINTED ANGEL AND MAY ASSIST IN SOME STREET CROSSING." And the children feared and obeyed for such orderliness must surely be best.

Some of the followers may have crossed many streets and some have even crossed a highway or two if their humbleness and coin were great enough to appease the golden ones. But often they found a good street with but a few cars and couldn't cross. If only there had been another to help .....

One day a follower of the Way was waiting his turn to cross. The signal came, he was motioned ahead, and he crossed the street. Upon reaching the other side, he ran into an old grammar school buddy, one who had broken the Law of the Way. "Why Gene, how did you get here?" he questioned. The old friend smiled, "Hello Barry, why I walked across 25 feet down when I saw a clear spot in the traffic." "But...but...I've waited 2 weeks to cross this street and...and..." stuttered Barry. "It's easy." said Gene. "It can't be," said Barry, "it's wrong, it's not the Way." "It is easy," said Gene, "and best of all, you can still learn! But you will have to open your mind and be prepared to THINK AND OBSERVE." Barry remembered those words. They were part of the forbidden fruits of the Way. Barry was nervous but also curious and drew closer to hear. "I must warn you, though," added Gene, "that once you learn, you may decide never to cross the street as you have in the past." Barry looked puzzled. "It's kinda like the zoo." said Gene. "Each animal lives day to day. They walk up and down and the keeper will throw them a pound or two of meat now and then. For all they know, that's life. But if they are trained to use their natural skills and let loose, they will discover that their life has been one of captivity and suppression. If they see the keeper, they will run away for they know that to be free is best."

"Yes," said Barry, "but I'm afraid to leave the holy and righteous Way. I mean, it's almost always worked. Why, one time there was a great fog on the street and I couldn't tell if I had crossed the street or not until the Golden One pronounced, GOOD CROSSING, NEXT SHEEP." Gene put his arm over Barry's shoulder and spoke softly, "Well Barry, even a blind man can cross the street and tell if he has reached the other side. Did you ever think about the early days, Barry? Before traffic lights and highways; before car-pools and buses? There were NO safety patrols! We were all free and independent street crossers, crossing wherever and whenever we could. The safety patrol is a contrivance of MAN, the holy way is NOT holy!" "But I have to be sure," pleaded Barry, "I've followed the Way all my life, give me a sign." "Okay Barry, how many streets have you crossed in you life?" "Oh....200 or so." was the answer. "Well I did that in my sophomore year of high school," said Gene, "but more importantly, can you cross ANY street by yourself?" Barry thought for a while and then said, "Well, maybe a few lanes or an alley."

Barry felt very empty. The Way was no way at all. "Will you teach me? Can I really still learn?" "Of course," smiled Gene, "you can still learn, but you will be your own teacher." Barry stopped trembling. He smiled, and arm in arm with Gene, walked to the next street. Gene pointed and Barry saw the old playground. Barry approached the street. Slowly, carefully, he ventured out. There were no cars and he sprinted across. He turned and smiled at Gene. "This was a good place to start." said Barry. "Yea, I know." said Gene, "Good luck!"



KH6BZF PROPAGATION REPORT

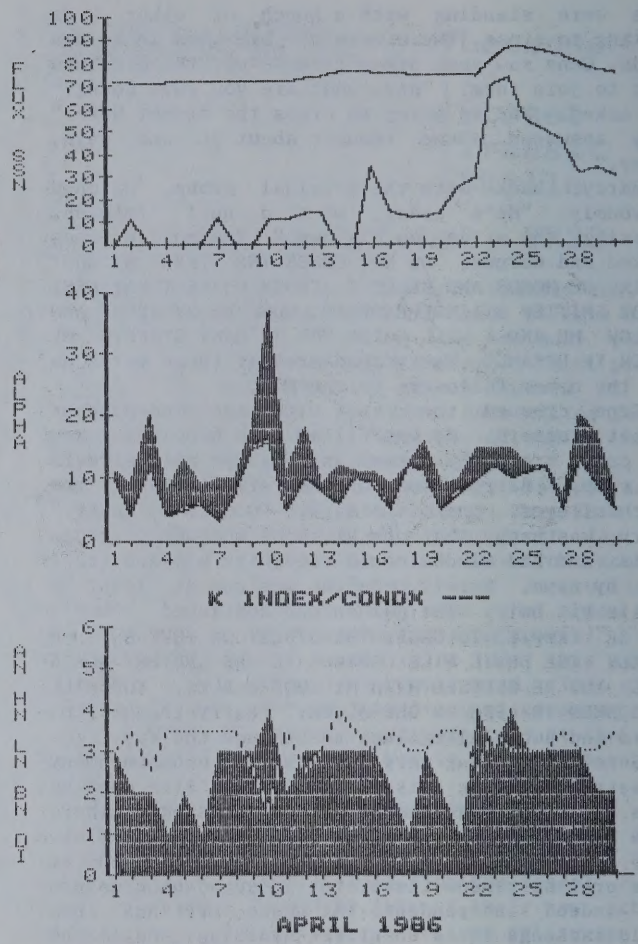
Lee Wical, KH6BZF

Statistical information is compiled by KH6BZF and processed on a computer by VE3BMV.

The first diagram shows the value of solar flux (top curve) and SSN - sunspot number (bottom curve). The Y axis and scale is the same for both. The X axis is calibrated in days of the month.

The second diagram shows variation of the Alpha Index for each day. The dark shaded area shows increases, while the white area shows decreases in the value of the Alpha Index for each day.

The third diagram shows the value of the K Index (shaded area) on a scale from 0 to 6. The dotted line represents the propagation quality where the scale is: from 5 = Above Normal to 1 = Disturbed.



FORECAST:

BEST HF CONDX: JUN: 12 - 14, 24
BEST VHF CONDX: JUN: 01 - 02, 18 - 24

APR '86	CONDX	SOL FLUX LEVEL	SSN# GEOMAGNETIC LEVEL	ALPHA K INDEX INDX NOTES
01	LN	072 VY LOW	00 QUIET-UNSETTLED	10/11 K=3 NO SUNSPOTS
02	HN-LN	071 VY LOW	11 ACTIVE-QUIET	04/09 K=2 RGN 4721(1) S02, W07
03	LN-BN	071 VY LOW	00 ACTIVE UNSETTLED	12/20 K=2 NO SUNSPOTS
04	HN-LN	072 VY LOW	00 QUIET UNSETTLED	04/08 K=1 NO SUNSPOTS
05	HN-LN	072 VY LOW	00 QUIET UNSETTLED	05/13 K=2 NO SUNSPOTS
06	HN-LN	072 VY LOW	00 UNSETTLED QUIET	06/09 K=1 NO SUNSPOTS
07	HN-LN	072 VY LOW	12 QUIET UNSETTLED	03/10 K=3 RGN 4722(2) S09, W02
08	HN-LN	072 VY LOW	00 UNSETTLED	08/10 K=3 RGN 4722(0) S09, W15
09	LN-BN	072 VY LOW	00 UNSETTLED	15/18 K=3 RGN 4722(0) S09, W28
10	BN-DIS	072 VY LOW	11 VERY ACTIVE-UNSETTLED	16/37 K=4 RGN 4723(1) S11, E47
11	HN-LN	072 VY LOW	11 QUIET UNSETTLED	05/11 K=2 RGN 4723(1) S11, E24
12	LN-BN	073 VY LOW	14 QUIET UNSETTLED	10/18 K=3 RGN 4723(4) S12, E13
13	LN	074 VY LOW	14 QUIET UNSETTLED	08/09 K=3 RGN 4723(4) S12, E08
14	HN	076 VY LOW	00 QUIET UNSETTLED	06/12 K=3 RGN 4723(0) S12, W05
15	HN-LN	076 VY LOW	00 UNSETTLED QUIET	10/11 K=3 RGN 4723(0) S12, W18
16	LN	075 VY LOW	34 QUIET UNSETTLED	09/11 K=3 RGN 4723(1) S12, W31; 4724(1) S11, W36; 4725(2) N01, E59
17	HN-LN	075 VY LOW	14 QUIET UNSETTLED	05/09 K=2 RGN 4725(4) N01, E46
18	LN	074 VY LOW	12 UNSETTLED	12/12 K=1 RGN 4725(2) N01, E33
19	LN	074 VY LOW	12 UNSETTLED	11/16 K=3 RGN 4725(2) N01, E20
20	HN-LN	074 VY LOW	14 UNSETTLED	05/09 K=2 RGN 4725(4) N02, E06
21	HN-LN	074 VY LOW	25 UNSETTLED QUIET	08/10 K=1 RGN 4725(4) N02, E06
22	LN-BN	073 VY LOW	29 QUIET UNSETTLED	10/15 K=4 RGN 4725, 4726
23	HN-LN	081 MODERATE	70 QUIET UNSETTLED	12/15 K=3 RGN 4725, 4726
24	LN	086 MOD-LOW	73 UNSETTLED	10/15 K=4 RGN 4725, 4726, 4727
		MAJOR FLARES: M1/2B@24/0044 UTC; M1/SB@24/0350 UTC; M1/1B@24/0600 UTC		
25	LN	085 VY LOW	54 QUIET UNSETTLED	11/12 K=3 RGN 4725, 4726, 4727
26	LN	084 VY LOW	49 UNSETTLED	12/12 K=3 RGN 4727, 4727
27	HN-LN	082 VY LOW	45 QUIET	05/07 K=3 RGN 4726(24) N04, W59; 4727(1) N05, W18
28	HN-BN	079 VY LOW	31 UNSETTLED ACTIVE	13/20 K=3 RGN 4726(10) N04, W73; 4727(1) N05, W31
29	LN	076 VY LOW	33 UNSETTLED	09/17 K=2 RGN 4726(9) N04, W86; 4727(4) N05, W44
30	HN-LN	074 VY LOW	29 QUIET UNSETTLED	05/08 K=2 RGN 4726(4) N04, W90; 4726 rotated off W limb; 4727(5) N05, W57

Chuck Clark, K4ZN

TRAFFIC EMERGENCY

Wiser Counsel Prevailed

Just after last month's column was mailed, word came that the FCC has suspended the new rules that would have forbidden stations in automatic operation to handle third-party traffic. Until the Commission has had time to examine the petitions for reconsideration, stations in automatic operation may relay third-party traffic, provided that the originating station has a control operator on duty. We hope that an examination of the arguments presented in the petitions will convince the FCC that this is the wiser course, and we hope that the final result will be a Report and Order confirming this present temporary arrangement as the permanent regulation.

CW Forever?

Seems like last month's column went out too soon. After saying how important it is for us to maintain some proficiency in the use of CW, and mailing it to the editor, I learned of a message that appeared in the Communicator, newsletter of Air Force MARS, from Ray Collins, Chief, USAF MARS, saying that nobody knows what communication needs would be in the event of a large-scale nuclear conflict, nor what would be available to meet those needs, "semaphore, smoke signals, and yes, CW." He goes on to say how CW was used sucessfully in two world wars, in Korea and in Vietnam, but high-tech systems have been taking over communications lately, and we don't know whether much of it would survive. It's better to keep as many options open as possible. (Someone might quibble with Ray and observe that CW wasn't used so very much during World War I, most radio transmitters still used spark at that time).

To put this into practice, new MARS members who indicate a preference for CW operation will be assigned to a CW net for training, instead of to a voice net as has been done for all recruits in recent years. Don't write CW's epitaph yet!

Emergency Antennas

A station is only as good as its antenna. In an emergency situation, one might be able to use the regular station antenna. If so, fine. But often the antenna is one of the casualties of the emergency situation, blown down by the storm, or damaged by ice. Or it may be necessary to take the rig to a portable location, perhaps a Red Cross shelter, to provide emergency communication from there. What can we use for an antenna?

Older tube rigs, particularly the home-brew variety, were able to feed power into almost anything from a wet string to a rhombic, we used to say. But no longer. Ham rigs built during the past couple decades don't like anything other than a fifty-ohm resistive load. Their output drops rapidly if you use anything else, and in some cases you can damage the gear if the mismatch is excessive.

A typical tube rig might run 160 watts, say 200 milliamperes at 800 volts, matching a 2000 ohm load. For a Q of 10, the reactance of coil and capacitor in the output circuit should be 200 ohms, a value easily obtained with standard coils and capacitors. A solid-state 160-watt amplifier, on the contrary, would pull over 13 amperes from a 12-volt supply, and would require a load of 0.45 ohms, and so the output circuit is quite different. The usual design employs broad-band transformers followed by low-pass filters.

There's a lot of misinformation going around in amateur circles about the need to match feedlines and antennas, such as the myths that a mismatch results in serious loss of power, that the reflected power from a mismatch can overload the final, or that a high SWR can cause radiation from the feedline. There are good reasons for matching the load to the transmitter, but not these.

One reason can be that the designer of the transmitter kept costs down by making no provision for matching anything but a 50-ohm non-reactive load, and perhaps economized still more by providing no factor of safety to protect against the higher than normal voltages that are developed when the load is not matched. Or, in the case of transistorized rigs, the output power may be reduced automatically when the load is not matched, to protect the final transistors. In solid-state gear, the output filter won't filter properly unless it is terminated in the load for which it was designed. Another good reason that applies equally to tube and solid-state gear is the need for tight shielding to keep TVI-producing harmonics locked up inside. This requires coaxial cable for the output, and coax is usually operated at a low SWR.

Another antenna myth is that an antenna has to be resonant to be effective, and so must be trimmed to length. No, you can make any length of wire take power, a fact that could be valuable to know in an emergency. It need not be resonant, what is needed is that it presents a proper resistive load to the transmitter. A terminated rhombic, for instance, is not resonant. It presents a load of 800 ohms over a wide range of frequencies (several octaves), and can be matched to a 50-ohm output by using two 4:1 baluns. But rhombic antennas are huge affairs, requiring acres of real estate and at least four supports, not something you would set up in an emergency.

For an emergency antenna, possibly the handiest thing to have available is a length of wire, 100 feet or so, with insulators and pieces of rope to attach it to any available supports, plus a matching network. The simplest network, the L match, is shown in Figure 1, and covers 160 through 10 meters. Both variable inductor and capacitor are available from military surplus dealers, such as Fair Radio Sales in Lima, Ohio. You need a ground connection when you use this circuit, but if

the antenna is over about 0.4 wavelengths long (200 feet on 160 meters, proportionately less on higher frequencies), the ground connection won't be critical--you won't need radials and such things.

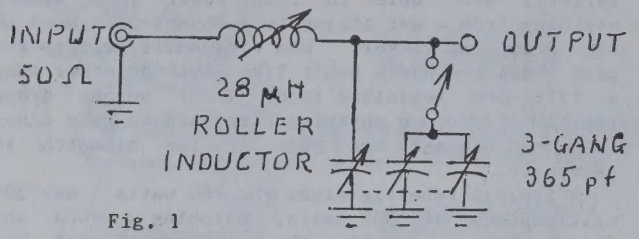


Fig. 1

To tune this antenna system, you can use either an SWR meter or a field-strength meter, or even just the plate-current meter. Adjust coil and capacitor for minimum SWR, maximum radiated field, or rated plate current. Increasing the inductance and lowering the capacitance matches higher-impedance loads, and also causes the circuit to tune more sharply (higher Q). While this antenna system won't give you the performance of a four-element beam, it will make it possible for you to put out a signal even though an irate neighbor clipped the guy wires of your tower.

How about commercially built matching networks? Some are better than others. Be sure the network can handle the kind of mismatch you expect. Some are only trimmers, can't handle anything over 3:1 SWR, for instance. Be particularly wary of "automatic matching networks." Some of them are real rip-offs, merely dummy loads that make the SWR look better by absorbing power from the transmitter to reduce the Q of the antenna circuit. A real automatic antenna matcher costs at least $700 these days. It's wise to try the unit out with your rig and antenna before you buy it, whether it is manual or automatic.

Tubes or Transistors?

There seems to be no question as to which way the industry is heading. Just about all the ham gear offered for sale these days is solid-state, except for final amplifiers and external amplifiers. And even here solid-state gear is quite widely available, although still at a somewhat higher price. Solid-state gear runs cooler, is lighter in weight and more compact, uses less energy, is more rugged mechanically, does not have the limited lifetime associated with tubes, requires no warm-up, operates at lower voltages (12 volts is typical), and now usually costs less, all good reasons for planning to use solid-state gear in emergency operation.

But tubes still have a few things going for them too. Put your old tube gear up in the attic, but don't junk it, you just might need it someday. Tubes are much more rugged electrically, might be able to survive the electromagnetic pulse (EMP) generated by a nuclear blast, or the poorly regulated output of a stand-by generator. Tube gear is generally more tolerant of mismatched load, and is easier to repair, particularly older equipment using hand-installed point-to-point wiring. Another factor that is important to many of us is that tube gear is available on the used equipment market for very good prices. It is true, however, that new tubes for replacement can be hard to find, and can cost an arm and a leg to buy if you do find them. But again, the surplus dealers still have large stocks and their prices are good.

License: Free Operating: $350

Tad Cook, KT7H

Most of us have heard of hams getting into hot water with their local municipality for erecting monster HF antennas...but for an average two meter vertical? It happened at KA7TVC!

Cliff Wells, KA7TVC, has lived in an apartment in Kirkland, WA, a Seattle suburb, for the last year. Recently when Cliff decided to erect the popular Isopole two meter antenna manufactured by AEA, he contacted the building owner for permission. The owner said okay, and Cliff put up the antenna so that it extended a few feet above the peak of the roof.

Normally, one would expect the story of the antenna project to end here. But a neighbor of Cliff's who lives in a nearby condominium that has a covenant forbidding any outside antennas objected, telling Cliff that the antenna would have to come down. She claimed protection under a town ordinance that regulates any outside antenna that transmits radio signals.

When Cliff inquired about the ordinance at city hall, he was slapped with a citation for violating a 3 year old law that requires anyone who erects a transmitting antenna to submit engineering drawings, hold a public hearing, and pay a $350 fee to have a hearing examiner review the application. The ordinance goes on to state that the antenna must be erected at only the minimum height to operate efficiently, and then it goes on to make the vague requirement that it "interfere with the rights of neighbors."

Cliff is now in the process of appealing the citation, hoping that support from the ARRL and the recent PRB-1 ruling from the FCC will help to convince the town government that the ordinance is vague, unenforceable and not in the best interest of the community.

Interestingly enough, the law only applies to non-commercial transmitting antennas, so an antenna used by the fire department is illegal while an Isopole identical to Cliff's used by a scanner owner for receiving would be perfectly legal.

Local hams will be watching this one closely. Although the law is over 3 years old, it has never been enforced until now. If it stands as written, it could set a dangerous precedent affecting all communications users. (Westlink Report)

1986 KANSAS CITY DX CLUB PILEUP CONTEST RESULTS

HAMVENTION CONTEST FORUM RESULTS		KCDXC HOSPITALITY SUITE RESULTS	
1. AH2U	36	1. W3VT	58
2. W3LPL	35	2. W3LPL	57
3. K1AR	33	3. AH2U	56
4. WD8IXE	33	4. K1AR	56
5. K1VR	32	5. WA8YVR	56
6. K3HPG	31	6. G3SXW	55
7. K5NA	31	7. KQ2M	54
8. K1FG	31	8. KC8C	54
9. N3BB	31	9. K1VR	53
10. N8II	31	10. W9KNI	53
11. KC8C	31	11. W2REH	52
12. KQ2M	31	12. K1EA	52

FCC NEWS

BILL GRENFELL, W4GF

"NO QUALIFIED PERSONS SHOULD FAIL AN EXAMINATION SOLELY BECAUSE OF A HANDICAP" wrote FCC's John B. Johnston, W3BE, in response to a query from a Liberty, MO Club VEC. "No doctor's statement is required in the case of a candidate whose physical disabilities require special procedures to allow participation in examination sessions." The FCC Personal Radio Branch Chief advised that the former certification of inability to appear at an FCC supervised examination due to protracted disability was not carried over to the VEC testing system. (Westlink Report, 03/07/86) I can recall a query some years ago from W6ML2 about giving the exam to two brothers who were paralyzed from the neck down. He was advised to plan for the exams to be given in any way in which the brothers could demonstrate their qualifications and for a report of the procedure and the results to be forwarded to FCC in Washington for consideration. As a result, they both qualified in the code and written tests and were issued General Class licenses!

"...WE HOPE YOU CAN UNDERSTAND WHY WE CANNOT ADOPT YOUR SUGGESTION...(TO) DISTRIBUTE 1X2 AND 2X1 AMATEUR RADIO CALL SIGNS...WHICH HAVE BECOME AVAILABLE DUE TO DEATH, REVOCATION, OR OTHER REASONS." (From a 03/06/86 letter by FCC's Private Radio Bureau Chief, Robert S. Foosaner). "We have reached the point at which our lack of resources precludes all but the most basic licensing functions....We are, however, exploring ways in which your objectives could be met through the private sector." (K4EED, 03/11/86).

EFFECTIVE 03/01/86 FCC AMENDED THE AMATEUR RULES (PART 97) TO CORRECT ITS 01/03/86 ORDER IN PR DOCKET NO. 85-23 (see last month's FCC News, first paragraph). At rule 97.7(b) change the 7100-7175 kHz 40 meter band listing to 7100-7150 kHz, the limitations column for this band should include number 2 as well as number 1. At rule 97.7(d) "Limitations:", number (2) should read "Amateur stations located in Regions 1 and 3, and amateur stations located within Region 2 which are west of 130 degrees West longitude or south of 20 degrees North latitude may also use A3E, F3E, G3E, H3E and R3E emissions."

FCC HAS APPROVED WAIVER OF RULE SECTIONS 97.80(b) and 97.114(b)(4), TO PERMIT THE (AUTOMATIC) RETRANSMISSION OF THIRD-PARTY TRAFFIC (ON PACKET RADIO ABOVE 50 MHz) "USING THE AX.25 (OR COMPATIBLE) PROTOCOL." (Order, PR Docket No. 85-105, 03/14/86). FCC: "The presence of the responsible licensed control operator at each station has been a vital element in the amateur self-policing tradition." The ARRL's petition for the waiver argued "...that this safeguard is neither practical nor effective in the he context of packet radio technology." ARRL said the application of traditional control requirements to amateur packet radio would severely limit development of the network. The waiver requested by ARRL only relates to the retransmission of messages already properly screened; a control operator will still be required at every amateur station introducing messages into a packet system. The waiver will remain in effect until the FCC takes final action on the petitions for reconsideration filed in PR Docket No. 85-105 (probably not until late summer).

FCC TERMINATED ITS PROPOSAL TO PERMIT AUXILIARY OPERATION ON ALL AMATEUR FREQUENCIES EXCEPT 431-433 AND 435-438 MHZ, PR Docket 85-215, by Order adopted 03/20/86. The Quarter Century Wireless Association had petitioned for the rule change in the belief that the present technological state of the art made restrictions on auxiliary operation unnecessary. The FCC said ...the comments showed there was currently a good match between the frequencies authorized for auxiliary operation and auxiliary link functions. It also noted that the potentially disruptive interference which could occur to other amateur activities from expanded auxiliary operation outweighed the increased flexibility which could be achieved by the proposal.

THE 1986 EDITION OF ARRL'S "THE FCC RULE BOOK" WAS AVAILABLE EARLY IN APRIL. It is the one place you can find a reasonably up-to-date copy of the rules at a reasonable price! The updating to the 1987 edition will be the task of a former FCC employee, Phil Sager, WB4FDT, who just recently assumed the position of Manager of the ARRL's Regulatory Information Branch. Beside writing columns for QST and editing the Rules Book, Phil will also edit the biweekly ARRL Letter.

OUTLAWING JUST INTENTIONAL INTERCEPTION OF COMMUNICATIONS FOR WHICH A DEGREE OF ENCRYPTION HAS BEEN PROVIDED APPEARS TO BE THE DIRECTION TOWARD WHICH CONGRESS IS LEANING IN ITS CONSIDERATION OF THE HR 3378 PRIVACY ACT. They also want some leverage to use against advertisers of eavesdropping scanners, etc. Representative Robert W. Kastenmeier wrote: You and your member will be glad to know that ham radio communications are entirely exempt form the proscriptions of HR 3378. (ARRL Letter, 03/28/86; Westlink Report, 03/07/86).

"...THE FCC MONITORING STATION IN FT. LAUDERDALE, FL CITED 21 AMATEURS PARTICIPATING IN A 'SWAP AND SHOP' NET. The citations represented a change in the FCC position on this subject. ARRL found that FCC had not changed its position and "...understands that FCC will cancel the citations which were issued." (ARRL Letter, 03/28/86). "The Commission interprets (Section 97.112) as meaning that 'Amateurs may use their stations from time to time to discuss the availability of a piece of Amateur Radio equipment, but such activity would be limited to that of an occasional nature.'" ARRL Letter 03/14/86. Section 97.112(a) reads: "An amateur station shall not be used to transmit or receive messages for hire, nor for communication for material compensation, direct or indirect, paid or promised."

THE USE OF ILLEGAL CB POWER AMPLIFIERS IS A CONTINUING PROBLEM FOR FCC'S FIELD OPERATIONS BUREAU. During 1985 the Bureau received over 28,000 complaints of rf interference to TV and other home electronic equipment that they directly attribute to CBers operating in close proximity and with illegally high power. Beside going after the manufacturers of the amplifiers, FCC is stepping up their activity in locating and closing stations using linear amplifiers and other illegal equipment. They will be issuing fines (forfeitures) of up to $2,000 and may initiate federal criminal prosecution where the penalty can be up to 1 year in jail and/or a $10,000 fine. Richard M. Smith, FCC's Field Operations Bureau Chief, has asked that the public become involved by reporting the illegal manufacture, marketing, or use of CB linear amplifiers to local FCC Field Offices. He observed that "Amateurs have a responsibility to maintain good relationships in a neighborhood even though, from their standpoint, they are operating their stations totally in compliance with FCC rules." (ARRL Letter, 03/14/86; Westlink Report, 03/21/86).

PRESIDENT REAGAN HAS NOMINATED PATRICIA DIAZ DENNIS FOR THE FCC COMMISSIONER SEAT VACATED BY THE RESIGNATION OF HENRY RIVERA. She is currently a member of the National Labor Relations Board and formerly was employed as a labor relations attorney for ABC. The nomination requires Senate approval. Formerly there has been seven members of the FCC, each appointed for a seven-year term. Recently the Senate reduced the number of commissioners to five, but continued the seven-year term system. When a Commissioner leaves before the end of the regular term for his or her "seat" on the Commission, the

succeeding Commissioner appointee usually finishes out that term before becoming eligible for a full term. In March, Senator Goldwater introduced legislation to reduce the term to five years, but without affecting the present terms of any sitting commissioners. (ARRL Letter, 03/28/86; Westlink Report, 03/21/86).

FCC NOW PUBLISHES ONLY SUMMARIES OF ITS RULEMAKING ACTIONS AND POLICY STATEMENTS IN THE FEDERAL REGISTER. This is expected to save the Commission nearly $500,000 annually, and is necessitated by cuts in its budget and rising Register costs. Texts of rulemaking Notices and Orders will continue to be published in full by FCC.

NOVICE AND TECHNICIAN OPERATION IN THE 7050-7075 MHz BAND IN AREAS WEST OF 130 DEGREES WEST LONGITUDE OR SOUTH OF 20 DEGREES NORTH LATITUDE HAS BEEN REQUESTED BY A HAWAIIAN RADIO CLUB. This includes Novices and Technicians in Alaska, Hawaii and Pacific Islands, and in the U.S. Virgin Islands and Puerto Rico. Comments should refer to RM 5361 and be sent to FCC, Washington, D.C. 20554. (ARRL Letter, 03/28/86).

"AMATEURS IN WOOSTER, PA, AND TUCSON, AZ, HAVE SUCCESSFULLY OPPOSED PROPOSED TOWER RESTRICTIONS IN THOSE TWO COMMUNITIES" IS THE HEADLINE FOR A "PRB-1 SUCCESSES" REPORT IN THE HE 03/14/86 ARRL LETTER. "PRB-1" refers to Memorandum Opinion and Order adopted 09/16 85 by FCC expressing its policy "In the matter of Federal preemption of state and local regulations pertaining to Amateur radio facilities." The Order is limited to amateur station antennas and their supporting structures.

A U.S. VOLUNTEER EXAMINER TEAM IS NOW SET UP AS A PART OF A RADIO CLUB IN ENGLAND AND IS SPONSORING CLASSES FOR SEVERAL OF THEIR BRITISH MEMBERS LOOKING TOWARD THEIR GETTING FCC AMATEUR LICENSES. There are advantages for U.K. amateurs to operate in the U.S. under authority of a U.S. license rather that with a reciprocal permit and their U.K. license. If they operate in the U.S. under their U.K. privileges. Since the U.K. two meter band ends at 146 MHz, they would therefore have to stay within 144-146 MHz while operating here in the States and Territories. Aliens applying for a U.S. amateur license must furnish an address where FCC mail will be sure to reach them. FCC's rule Section 97.7 provides that "Anyone except a representative of a foreign government is eligible for an amateur operator license."

PRESIDENT REAGAN HAS PROPOSED AN ADDITION OF $1.9 MILLION TO BRING THE 1987 FCC BUDGET TO A $96.4 MILLION TOTAL. Fred Maia, W5YI, writes they "may never see it...Gramm-Rudman-Hollings will probably take it away!" (W5YI Report, 03/15/86).

FCC HAS REQUESTED THAT CONGRESS ADOPT AN AMENDMENT TO THE COMMUNICATIONS ACT, (NEW SECTION 333) WHICH WOULD ALLOW THE COMMISSION TO INITIALLY SEEK IMMEDIATE CRIMINAL PROSECUTION BY THE U.S. ATTORNEY, PROVIDE FOR IMMEDIATE SEIZURE OF THE OFFENDING RADIO EQUIPMENT USED TO CAUSE WILLFUL AND MALICIOUS INTERFERENCE AND TO MAKE THE OFFENDERS SUBJECT TO THE MORE SEVERE CRIMINAL SANCTIONS SPECIFIED IN SECTION 501. That Section provides for a fine up to $10,000 or imprisonment for up to one year, or both, for a first offense (a misdemeanor) and the same fine limitation and up to two years imprisonment for repeated offenses (a felony). The Commission could thus dispense with the necessity of first completing lengthy and complex administrative proceedings. (ARRL Letter, 03/28/86).

"THE FCC HAS ASKED US TO REMIND AMATEURS THAT TRANSMITTING EQUIPMENT USED IN OTHER SERVICES (EXCEPT MARS AND THE LIKE) MUST BE TYPE-ACCEPTED. "Much two-meter equipment available today can be made to work on frequencies considerably above and below this amateur band. "Amateurs should bear in mind, while it may be a great temptation to do so, the use of gear converted from the Amateur Service to another service is not permitted." (ARRL Letter, 03/28/86). I have heard radio Amateurs who are boat owners speculate about using amateur transceivers on the marine high frequencies. That too is a no-no!

THE FCC HAS PROPOSED TO THE CONGRESS THAT THE CONFLICT OF INTEREST STATUTE AND REGULATIONS WITH RESPECT TO VOLUNTEER EXAMINER COORDINATORS BE ELIMINATED. FCC states that with the advent of multiple examinations and various examination packages, the statute and rule is no longer necessary. At its March 22 meeting, the ARRL EXecutive Committee "...urged Congress and the FCC to preserve the Conflict of Interest statute and regulations with respect to Volunteer Examiner Coordinators..." (ARRL Letter, 03/28/86). The FCC's "Conflicts of interest" is Section 97.509: "An organization engaged in the manufacture or distribution of equipment used in connection with amateur radio transmissions, or in the preparation or distribution of any publication used in preparation for obtaining amateur radio station operator licenses may be a VEC only upon a persuasive showing to the Commission that preventive measures have been taken to preclude any possible conflict of interest."

THE FCC URGES THE FAMILIES OF DECEASED AMATEURS TO SEND IN THEIR LICENSE, OR A LETTER IF A LICENSE CANNOT BE FOUND, REQUESTING CANCELLATION OF THE LICENSE. The Commission no longer deletes calls of Silent Keys unless its cancellation is specifically requested. Since the term of an amateur license is now 10 years, the family of the deceased amateur could continue to receive correspondence, which is based upon FCC records, for that period. The letter or license should be sent to FCC, Consumer Affairs Office, Gettysburg, PA 17325. (ARRL Letter, 03/28/86) (W4GF)

END-OF-MONTH LICENSE TOTALS 1986

JANUARY	CLASS	FEBRUARY
38,624	EXTRA	38,931
98,003	ADVANCED	98,357
117,110	GENERAL	117,407
83,879	TECHNICIAN	84,478
78,999	NOVICE	79,028
416,615	TOTALS	418,201

VE7EXPO operating schedule

Period: daily May 2 to October 13, 1986
Time: 1700Z to 0500Z the following day
Frequencies:

C.W.		S.S.B.	
A	B	A	B
3.510	3.710	3.740	3.795
7.010	7.110	7.080	7.155
10.105	10.120		
14.010	14.030	14.135	14.205
21.010	21.110	21.135	21.205
28.010	28.110	28.135	28.305

R.T.T.Y.	S.S.T.V.
3.590	3.845
7.040	7.171
10.140	
14.090	14.230
21.090	21.340
28.090	28.680

Rich, K1CC, and his friend Jerzy, SP3BQD, visited our booth at the Hamvention

Yuri:

If we enter a contest, we accept the rules of it and the decision of the judges.

N4IN is doing his job as he sees it. He sent me a letter detailing the errors picked up and all the errors were there. As a result I have been more careful since. Also, when NOT in a contest. I have been careful to QSO more than one contestant.

We should complain!! In one 160 meter contest in the USSR, 500 contestants were disqualified because of log discrepancies.

If we don't like the rules, we don't have to send in the entry. In some countries, a participant is obliged to send in a log. It is not easy to find people prepared to devote time and energy to checking hundreds of logs. If we knock the pianist too hard we may not find anyone to play the piano!

Bob Eldridge, VE7BS

Dear Bob,

Right on! I have learned from my mistakes and I am much more careful now when operating contests. Log checking is a tedious job. All those doing it deserve our admiration and thanks, but as they point out our errors, we should point out theirs too. This way we all will be almost error free! Yuri

Yuri:

I haven't made the grade yet to stubborn OT. But my age plus my years on 160 total 105, so, I am on my way to being one of the "owners of 160." You want to hear form some 160 operators, so...

1. I have more problems with other DXers than with ragchewers. Proper use of the bells and whistles on the rig will usually winkle out a DX CW station from a ragchewing group, but it does not help me find the signal under ten persistent long and loud stations calling right on frequency, even if the AGC is switched off.

2. One hears more bad manners from the DXers and form "UP" (directed at each other and that mysterious person "LID") than from the ragchewers.

3. Surely the loudest, and the most whiskery, signals are in the pileups. When the DX is very rare, the callers do not get louder, but they get much more distorted.

4. Most countries in the world do not have legislated sub-bands. Are they all in a state of chaos?

Personally, I do not like to ask the governments to force us to do something especially something a minority of us want, but if we must have legislation, what about this:

Make it illegal for ANY North American stations to transmit between 1830 and 1850. Then we can hear the DX, who will soon adopt the practice of telling us where they are listening, just as the JAs do today.

The rational: Most of the DX comes up between 1830 and 1850 and many countries permit only that band. We can operate almost anywhere between 1800 and 2000 (and anyone who has tried to operate outside Region 2 realizes what a wonderful situation we have on 160). Split operation is the only way to go, but it seems something has to act as a catalyst to precipitate it.

There is no solution acceptable to all, but this is as sensible as any and much easier to remember and get used to.

Regarding P29PR (note on page 7 of May issue), he has been on 160 for a long time. I have a QSL from him dated February, 1985, and have worked him several times since, the most recent being yesterday. He is usually around 1826/7 and prefers to listen around 1824 but suffers a lot of QRN.

The VKs are coming through most mornings now around our sunrise - don't forget that their winter comes up in the middle of the year. But don't throw away the inverted Vees just yet. They often outperform verticals at sunrise. Also, inverted vees and dipoles are vertically polarized off the ends. Don't knock them too hard! WA2SPL was thrilled with the result he got at W1CF on phased verticals, but have a look at the results he got from his own inverted vee when he won an earlier Top band contest from home.

Bob Eldridge, VE7BS

Dear Yuri,

We made a contact when I was on my recent trip to the Cayman Islands between March 27 and April 15. I visited Grand Cayman, Cayman Brac, and Little Cayman using the callsigns ZF1MM, /ZF9, and /ZF8. I made just about 8000 QSOs and had a very good time.

73, Doug Renwick, VE5RA

Yuri:

Thanks for the sample copy. I don't subscribe to any other than NCJ because of a decided lack in contest and DX coverage in CQ and QST, but RADIOSPORTING seems to just fit the ticket.

I had a ball as K7SS/WH6 in WPX. Went QRP with big metal and really had those antennas playing on 10. 15 and 20. Heard you all night on 75, but you couldn't hear me even though I called about 25 times at various hours. Oh well, maybe next year! I did a bit over 2 million and am looking forward to more QRP expeditions as the cycle rebuilds. I had a half hour JA run on 10 meters on the second day. See you in WPX CW back home in W7 land.

Aloha, Danny Eskenazi, K7SS

Dear Yuri,

I hope everything is well with you. The magazine sure looks in good health.

I keep seeing all these mods creeping up for the TS-940S to correct problems with it. I always look for the symptoms which the mods are supposed to cure on my own TS-940S, but I am yet to find any faults with it. Perhaps I was one of the lucky ones for a change. Hi.

It's too bad that the World Radio Contest had to collide with the California QSO Party, but I hope that something can be worked out with the California Gang. I like the weekend that you choose for the WRC and would hate to see it moved any closer to the CQ WW and wouldn't like to see it moved to the Spring either as I feel there are lots of DX type contests during that period and they would all become to close to each other.

If everything goes to plan here, a 5 element 20 meter Yagi should be flying over the QTH in June with other monos sprouting as 15 and 10 meters start showing signs of life again. I can barely wait to take the Tribander down.

Keep up the good work with RADIOSPORTING. It is well appreciated. WPX SSB all band score: 1036/374 887128

73, George Furtado, VE7EIK

Dear Yuri:

Good luck and welcome to 160 meters. I will be sure to give you a point in the CW WPX. Keep an ear finely and critically tuned to the CW signals. I and others (like KM1H) feel that the transmitted TS-940 "phase noise" problems are best heard here. Maybe they only exist on 160. SSB versus CW QRM with weak signal work on 160 is bad enough. Now we have very wide buzzing CW signals to contend with. Makes contesting interesting.

The self proclaimed experts who would blame my end or possibly RX phase noise from the other end have not heard the signals. Some signals remind me of the early 1960s LZ signals on which you are not sure where to zero beat. KM1H and I know of one station like that. With his amp off and our R-4Cs on different antennas, no change is found. Other bands do not sound the same. We are in 3 different states. Another contester who lives in sight of the TS-940 station is not so complacent.

I have 3 rigs: C-line mostly on 160, IC-745 which is the main rig and FT-901, a great workhorse. I've been to 20 countries including FROMM, KP2A/D,

KP2A/KP1, 5Z4MM/3B8, plus Field Days, where I learned how to replace PS Filter caps when the generator burps. That, by the way, came in handy on Desecheo. In fact, the FT-901, with modified receiver and filtering, was a good match for the fully modified R-4C on 160, and much better on 10. A good DXpedition rig with 6146s (match anything, not blow), with 1 memory (fine for DX and split operation), built in keyer, processor, etc. We took three matched up 6146s to 5Z4 in 1980 CQ WW CW and did a great two man multi-multi. Maybe the newer Yaesu rigs are even better.

Some operators have different ears and demand better quality signals, especially when such popular and relatively expensive equipment such as TS-940S is suspect. It took a long time to get manufacturers to worry about dynamic range and intercept points on their receive side. Maybe now pressure will end up improving the TX side!

73 and DX, Jim, K1MEM

Dear Yuri,

The February, 1986 issue of RADIOSPORTING is really interesting. With todays conditions, it seems that most of my DX work is done in contests, and your announcing of the IRSA World Radio Championship Contest, really looks like a challenge. New elements in the rules, Phone and CW on the following days, counting separate or together, making use of call areas and so on. I am looking forward to this year's October.

Only one thing, Yuri. I got the impression that the rules for the contest were not yet nailed down. You mention a possibility of a change in reporting. Also, I can't find any specific mentioning of own country. Will own country give points for all contacts, or only the usual multiplier? If so, what about call areas in W, VE, VK, RSFSR and JA land? You may find more numbers in RSFSR calls than 1, 3, 4, 6, 9 and 0. Asiatic RSFSR will, for example, use numbers form 7 to 0. will all RSFSR numbers be a multiplier?

You may find all this a bit impertinent, but the reason I ask is because I find the contest so good. I am selling a disk with a contest log programs for the Apple II. The programs are for CQ WPX, ARRL DX and CQ WW DX. These programs are "smart" in the way that they write the log with points and multipliers calculated, so that the contester has his log with the total score. The disk is delivered in versions for all DX Countries at home QTH. The sequence in the program is built up so I can make easy changes when I have a purchaser from a new country. Once sold to a country, I have the copy for further sale. That is the strength of my programs. Usually you can find these programs only for the US and maybe a couple of other big countries. I have not seen any other that offers a log calculated to the total score.

I find your IRSA WRCC so interesting that I would like to include it on the disk with the three other programs. But to do this I need all parameters true and exact. From any prefix written to the log, the program must be able to find the "normal" prefix and use this as the multiplier. I need the specific rules for points, categories, etc.

When all problems are ironed out on you side, I hope that you will send me the rules as fast as possible. I would like to be able to offer the program before this year's contest. At the present the disks sell for $25.00 US which covers my costs. But my biggest thrill is to run the program for myself.

Hope to hear from you, Yuri. Best of luck for you and your work with RADIOSPORTING.

73, Leif Nielsen, LA8DY

Dear Leif,

Yes, our rules allow you to work your own country for point and multiplier credit. This way we eliminate the big handicap that countries with many licensed hams have in the other contests.

For the USSR multipliers all the DXCC "countries" such as UM8, UL7, etc. count as multiplier plus the RSFSR (old UA prefix) call areas. This means that you could work the following for the multiplier credit from the Soviet Union: Ukraine, Kaliningradsk, Bielorussia, Franz Josef Land, Azerbaidzhan, Georgia, Armenia, Turkoman, Uzbek, Tadzhik, Kazakh, Kirghiz, Moldavia, Lithuania, Latvia, Estonia, UA1 (or UK,UV,UZ,UW - anything that is assigned to European Russian Soviet Federative Socialist Republic), UA3, UA4, UA6, UA9 (from Asian RSFSR) and UA0. A maximum of 22 multipliers can be claimed for working the USSR.

It is important to differentiate between Soviet and Russian. The Soviet Union is made of 15 republics and nations. Only one of them is "Russian" - that is the Russian Soviet Federative Socialist Republic. Back in old days they had UA prefix. ARRL recognizes the European and Asian parts as two "countries." Don't call Estonians, Ukrainians, etc. Russians! There might be some Russians living there, but they are individual republics with their own languages and cultures! For our WRC contest we count call areas represented by the number in the prefix. UZ1, UA1, UV1, UW1 will count as one multiplier if they are from the first district of the European RSFSR. The same goes for UA9 and UA0: you can count UZ9 or UV9 for the "9" district of the Asian RSFSR and anything with a "0" in it from Asian RSFSR for the "0" multiplier. Any of the districts counted as multiplier cannot be counted again as a "country" multiplier. For example, VE1 will not count as VE - Canada multiplier again, for the multiplier of two. When we say call area we mean all the possible prefixes allocated to that call area (the number in the callsign): JA1, JH1, JR1, JL1 will count as a multiplier of one.

So if we take our recent DXCC list we should remove the following countries: USA, Canada, Japan, Australia, European RSFSR, Asian RSFSR and add the following: ten USA call areas (W1 - 0), eleven Canadian areas (VE1-8, VO1,2, VY1), ten Japanese call areas (JA1-0), eight Australian call areas (VK1-8), six RSFSR call areas (UA1,3,4,6,9,0), we would get the maximum multiplier count possible. If you work let's say VK75AA, it is up to you to find out what his area is. If he is located in the VK2 district, then he will count as a VK2 and as a VK7! We are not looking for prefixes, we are looking for geographical areas as defined by the standard allocations in each country.

As far as your program for the Apple II computer goes, we would welcome any help in computerization of the log processing by the contesters and us. We are coming up with a set of guidelines for computerized logs hoping that they will satisfy most of the contest organizers, enable contesters to submit their logs on diskettes and also enable sponsors to do the checking by computer. This would be a prescribed format for the summary and log sheets in the ASCII which can be produced by any computer. More on that in our next issue. We will be glad to review and describe your program.

I hope this clears up any confusion. We are always open for comments and ideas on how to improve our contest.

73, de VE3BMV

Gentlemen: .

The cover of your April 1986 Issue, No.17, 8604, of *RADIOSPORTING* is a disgrace to the electronic industry and amateur radio members.

It is more difficult everyday to get a permit for an antenna structure. Your making available to the public and others, along with the caption (BEAUTIFY YOUR NEIGHBORHOOD), only leads to many applications being denied.

Thanks for your help.

Very truly yours,
R.A.Kleine,
Vice President, UNR-Rohn

Dear Mr. Vice President:

1. Any April fool can see that a broken Quad is by no means a beautiful thing.

2. This particular installation is by a world famous amateur contester and a world record holder. It is not an installation by somebody who doesn't know what he is doing.

3. Accidents happened to the Titanic, the Space Shuttle and a Chernobyl reactor, never mind the simple structured antennas. Houses and towns get wiped out by hurricanes.

4. Would anybody think that this is how we install and operate our antennas? Even a novice would know that it would not work this way.

5. If a hurricane damages the structure, we clean up the mess and put up a bigger and better antenna. As a matter of fact, I would think that the antenna and tower industry would love hurricanes because they sell more antennas.

6. Our magazine goes to hams. I doubt that any ham would be foolish enough to take the April issue to his local authorities and say: "Give me a permit, I want to put up a thing like this. It's beautiful!"

7. If you had a car accident, would you be a disgrace to the automobile industry and the other drivers?

8. I hope you enjoy the rest of our magazine, maybe even subscribe, or heaven forbid, advertise in it.

Sorry if we offended you!

Even more truly yours,

Yuri Zenon Blanarovich, P.Eng., M.Sc., Cfmg. E., VE3BMV, OK3BU
Editor/Publisher of RADIOSPORTING
President of Blanarovich Engineering Inc

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INTERNATIONAL RADIOSPORT ASSN.

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Purpose and objectives:

1. To promote international friendship and goodwill through sportsmanship, radio contesting and DXing.
2. To improve the quality of amateur radio operators and operating through education and experience, by voicing the opinions of radio amateurs that are experienced and have contributed to the hobby.
3. To promote amateur radio contesting and other operating-related activities as a sport, and to provide the publicity and recognition that it deserves in the public media.
4. To publish timely articles in the monthly magazine "RADIOSPORTING" on various subjects of interest to Contesters, DXers, SWL, VHF, UHF and microwave enthusiasts, on RTTY, SSTV, computers in communications, fox hunting and anything of interest to the active ham striving for self-improvement. To feature technical articles on equipment design and modifications, antenna construction, radio-wave propagation, and commercial equipment reviews by qualified people.
5. To organize, as an annual event, the "International Contest Symposium," which runs parallel (evenings) with the Dayton Hamvention; to feature timely topics with the participation of some of the world's leading amateurs at the Syposium.
6. To hold an annual Awards Dinner with an entertainment program, where awards for various achievements will be presented.
7. To maintain and publish all time record tables for significant contests.
8. To sponsor and run an annual World Contest Championship, based on results of a number of major contests, with the annual "Contester of the Year" awards in various categories.
9. To administer the "Contest Hall of Fame" and vote on awarding membership to those who have significantly contributed to the sport of contesting.
10. To coordinate and assist in the scheduling of international contests.
11. To hold regular weekly meetings on air on 20 and 80 m. (14.200, 3.830)
12. To provide an automatic, computer controlled bulletin station that transmits the latest DX and Contest news on CW and RTTY.(14.098)
13. All in all, the IRSA is dedicated to the pursuit of excellence and quality in amateur radio by promoting, publicizing and leading the way.
14. Attractive numbered membership certificates and badges are issued to members.
15. IRSA is run by contesters who are selected for their accomplishments and it is independent of any national or commercial organizations.
16. IRSA will assist and sponsor Contests/DXpeditions, Trophies and other radio sporting and publicity events.
17. IRSA is a non profit organization, with all proceeds to be used to finance events and awards sponsored by IRSA and to cover expenses incured by Association.
18. IRSA members can display the IRSA logo on their QSL cards and correspondence; members agree to obey the Contester's Code of Ethics and to promote it.

The initial fee to join the IRSA is US $12; it includes the cost of a certificate and a badge. The yearly membership dues are US $5. (Or 24 and 10 IRCs resp.)
Honorary Life Membership will be awarded to those who significantly contribute to IRSA and the sport of contesting.
Members are entitled to be elected and to elect officers of IRSA. They will also enjoy many services and privileges offered exclusively to members.

RADIOSPORTING

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